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A Merry Christmas to all our Readers

General Articles

STREPTOCOCCUS INFECTION IN MAN CAUSED THROUGH THE MEDIUM OF MILK FROM INFECTED UDDERS

S. V. GOLLEDGE, M.R.C.V.S.

Milk-borne outbreaks of streptococcus disease, in which the cases usually assume the clinical appearance spoken of as septic sore throat or scarlet fever, occur not uncommonly in human beings. A number of such outbreaks have been reported in the United States of America, where according to Armstrong and Parran (1927) between 1908 and 1926 there were 42 outbreaks of septic sore throat involving 21,045 persons with 139 deaths, and 40 outbreaks of scarlet fever involving 3,939 persons with 20 deaths. These figures may be compared with those given for outbreaks of milk-borne typhoid which, during the same period, numbered 479 with 14,968 cases and 219 deaths. In all these instances, according to Armstrong and Parran, the figures for case and mortality incidence are to be regarded as under-estimates.

Savage (1912) mentions 20 outbreaks of milk-borne streptococcus disease which occurred in Great Britain between 1875 and 1912, but it is certain that a number of small milk-borne epidemics of scarlet fever and sore throat have passed unrecorded. The appearance of an outbreak of streptococcus disease at Hove and Brighton during the winter of 1929-30 in which the infection was clearly carried by milk, indicates that the danger still exists.

It has been pointed out that the smaller outbreaks may quite possibly be due to direct contamination of the milk by human beings in the acute stages of infection or during the carrier stage. On the other hand, larger outbreaks, in which hundreds of people receiving milk from a common supply are affected within a short space of time, can only be explained by assuming gross and repeated contamination of the milk, such as must occur by actual infection of the milk-secreting passages by pathogenic streptococci of human origin. The evidence bearing on these points has recently been summarised by Minett (1932). While this evidence indicates unmistakably that streptococci from human sources may invade the udder and so bring about outbreaks in the human population, it is pointed out that for various reasons direct proof of this connection is difficult to obtain.

In the United States, however, on a number of occasions hæmolytic streptococci indistinguishable from those infecting the patients in milk-borne outbreaks have been isolated from milk of certain cows in the associated herds. Striking instances of this sort are described by Brown and Orcutt (1920) and by Jones and Little (1928). In the outbreak mentioned by Jones and Little, about 200 cases of scarlet fever appeared in a small town and of these 159 occurred within the space of six days. The origin of the outbreak was traced to the milk of a small herd of 13 cows, of which two were suffering from mastitis at the time the examination was made. In one of these animals the left-hind quarter was greatly swollen and milk which was changed in appearance could only be drawn with difficulty. The secretion from this quarter contained very large numbers of scarlet fever streptococci and these persisted for 19 days, after which the cow was slaughtered.

The fact that evidence concerning the rôle played by the cow is not easily obtained has prompted me to place on record the following facts regarding a small outbreak of milk-borne streptococcus infection in man, which came within my experience.

ACCOUNT OF THE OUTBREAK

Towards the latter part of April, 1930, following a series of four acute illnesses among the personnel of a certain dairy farm, I was requested by the County Medical Officer of Health to examine the cows in my official capacity for the presence of any disease which might be communicable to man. The history of the outbreak is briefly as follows.

About the middle of March, 1930, cowman A complained of pain in the palm of his hand, stating that he thought he had been pricked by a thistle whilst carrying hay. He continued work for two or three days but the hand became

DEPT. OF VET. MEDICINE

XUM

very swollen and he was sent to hospital, where after an illness of 10 days he died of acute streptococcal septicæmia.

A's wife had a cut on one of her fingers and after washing her husband's milking smock local sepsis developed, which cleared up after discharging pus.

A few days later milker B fell ill with abdominal pain, vomiting, diarrhœa and urticarial swelling of the face and penis; this persisted for a week and recovery then took place.

Three weeks after the death of cowman A the farmer himself, who assisted in the milking and in all probability also milked the infected cows, suffered from malaise, with coughing, expectoration and sweating. A septic condition developed in the region of the left axilla, generalisation was rapid, and death ensued in six days. No definite wound was discovered, but, as he was a manual worker his hands were rough and fissured, and it was thought that infection might have gained entrance through small cracks in the skin. Immediately after death a swab from an incision in the chest wall and a small piece of subcutaneous tissue were submitted to Dr. L. H. D. Thornton, who reported finding hæmolytic streptococci, which were identified by serological means as belonging to scarlatinal type I (F. Griffith, 1926). This was subsequently confirmed by Dr. F. Griffith himself. In Dr. Thornton's opinion these organisms were responsible for the fatal issue. As the previous illnesses were apparently of a similar nature, it was considered necessary to look for some common source of infection and it was thought that this was probably connected with the cattle.

Conditions on the Farm

Shortly after the farmer's decease I visited the farm and examined the dairy herd, which consisted of 38 cows in milk. It was learnt that the milk was sent to a factory, where it was the custom to condense all the milk before distribution. Generally speaking, the animals were in good condition, but, as was expected, certain udder abnormalities were detected. Five cows were affected with mastitis in some degree and from these animals approximately equal amounts of milk were drawn from each of the four quarters to fill a six-ounce bottle. The five samples were then forwarded to Dr. Thornton. From two of these (*viz.*, those from Cows 1 and 2, to be referred to later) short-chained hæmolytic streptococci were isolated, which subsequently proved to be identical with those obtained from the farmer. Dr. Thornton also found long-chained non-hæmolytic streptococci in the samples, but they were regarded as ordinary bovine mastitis streptococci and hence no special steps were taken to identify them.

As soon as the laboratory results were known, Cows 1 and 2 were placed in isolation. On enquiry it was stated that Cow 1 had developed trouble in one quarter about six months previously, but at the time of my examination three quarters of the udder were affected. Slight induration could be felt towards the base of left-hind and both right quarters, but this was not well marked and there was no visible enlargement. The secretion from each teat was blood-tinged and watery and contained a quantity of purulent material. In my opinion the condition was a chronic catarrhal one and only very slowly progressive, the cow was going dry and probably at the next calving symptoms would have reappeared. Cow 2 was stated to have become affected only about one week before my visit. The left hind quarter was then much enlarged, rather warm and diffusely indurated, but there was no appreciable tenderness. The teat of the diseased quarter showed several sores towards the apex. The secretion was watery, blood-stained and contained much coarse flocculent material. Both animals were in good general condition and neither showed constitutional symptoms or any affection of the joints. Until these cows were isolated their milk, so long as it appeared to be normal, was added to the mixed supply of the herd.

Within a week of my first visit, milk from the remaining cows in the herd was examined, the samples being from groups of five cows. On this occasion, however, no suspicious hæmolytic streptococci were isolated.

Laboratory Investigations

Material from the Affected Persons.—As mentioned above, streptococci belonging to Griffith's scarlatinal type I were isolated from the deceased farmer.

Milk from Cows 1 *and* 2.—As mentioned above, the milk from two of the cows (numbers 1 and 2) contained hæmolytic streptococci which were identical with those obtained from the farmer and these organisms were presumably responsible for the pathological condition in the udders. A subsequent attempt to determine which quarters of the udders were infected unfortunately failed, as there had been a large increase in the numbers of contaminating organisms owing to delay in transporting the milk samples. The cows were slaughtered before any further examination could be made.

Milking Smock.—This garment, which had been worn by the farmer, was also subjected to bacteriological examination and the same short-chained streptococcus again discovered. Naturally, however, a host of other organisms were also present. It should be noted that this garment had been worn by Cowman A, but as it had been washed by A's wife, who afterwards had a septic finger, it must have again

become contaminated by milk from the affected cows.

Discussion

As to the manner in which Cows 1 and 2 became infected with this particular kind of streptococcus, it may be regarded as probable that this was acquired during the course of milking from a cowman whose infection was derived in the first place from a human source. Cow 2 had a sore teat at the time of my visit and this would certainly have facilitated infection. Cow 1 had no teat abrasions and I was unable to ascertain whether she had previously shown sores. The milking smock would easily become contaminated and the septic condition of the finger of A's wife may have been derived from this source. The evidence strongly indicates that the farmer died as the result of direct inoculation from the milk. As to Cowman B, it was not definitely shown that his illness was caused by a similar streptococcus, but the sequence of events and the existence of urticaria are suggestive. It is of interest to note that the farmer's two children, aged 12 and 8 years, consumed raw milk from their father's herd throughout and remained entirely unaffected.

Outbreaks of streptococcus disease among the human population due to the consumption of contaminated milk, while not frequent, are quite well known. In the present instance, the possibility of extension was removed because the milk, in accordance with the routine practice, was heated before distribution. The events narrated above are a good illustration of the fact that even sterilisation must fail to eliminate the chances of contact infection from animal to milker. The fact that the farmer's children escaped agrees with experience in many previous outbreaks that it is chiefly adults who are attacked.

In milk-borne streptococcus disease the difficulty of providing the final evidence incriminating the cow has been mentioned. In the United States this difficulty has been overcome by Smith and Brown and by Brown and Orcutt, among others, in the case of septic sore throat and by Jones and Little in the case of milk-borne scarlet fever. One of the main points of interest in the outbreak now described lies in the fact that by good fortune it was possible to establish definitely the identity of the cows which were excreting the particular streptococci in the milk and that the organisms were shown to be of the same serological type as those which caused the death of the farmer. It is believed that this is the first time in this country that it has been possible to provide the final proof.

Summary

An outbreak of acute streptococcus disease among the personnel of a small farm is described. Four persons were affected of whom two, *viz.*, the farmer and one of his cowmen, died within a few days. Hæmolytic streptococci were isolated (1) from the tissues of the farmer after death, (2) from a milking smock worn by certain of the affected persons, and (3) from the milk of two of the 38 cows comprising the herd. The outbreak is of particular interest because the streptococci from all these sources proved to be identical in their cultural and serological reactions, belonging to scarlatinal type I (F. Griffith, 1926). The very strong presumption is that the two cows were infected, through the agency of a milker, with hæmolytic streptococci of human origin and that the subsequent human cases were reinfected from the milk of these two animals.

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I am greatly indebted to Dr. L. H. D. Thornton for valuable information regarding the outbreak and to Dr. F. C. Minett for assistance in compiling this paper.

From *The Veterinarian*

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And now, at the close of the fifth year of our literary connexion with our readers, "we wish them the compliments of the season"; and if but half the promises which have been lately made to us are fulfilled, that connexion, which we trust will last for many a long year to come, will be increasingly pleasing and useful. We will only remind our old and our embryo correspondents that we have arrived at that desired point when controversy—ill-tempered controversy, at least—may begin to cease among us, and that all that is now wanted to attain the common, the important, object of our readers and ourselves, is the freer communication of scientific passages and essays. Our pages will, as heretofore, ever be open to the exposure of error, although ourselves may be the parties accused. Our profession will be still our motto; its enemies—open, concealed, interested, or malignant—will be ours; but its cause will be best promoted by union amongst its friends.

XUM

CONVULSIONS IN CATTLE*

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Hereford

I wish to bring before you this afternoon some observations made upon and inferences drawn from a series of cases in cattle wherein the main predominant symptom was the exhibition of convulsions. Those of you who take an interest in the literature of the profession will have noticed various references to lactation tetany, mystery disease, Herefordshire disease, cerebro-spinal meningitis and convulsions. Such a varied nomenclature suggests that the expression of disease symptoms has given rise to several trains of thought upon the etiology of this condition. It will be my object in the course of my remarks to try and simplify and correlate these.

Cattle in the convulsive state came early under my observation whilst I was practising in this county over 20 years ago. More recently I have observed the condition in Herefordshire, sporadically, and in two periods, namely, 1924-5 and 1931-2, epizootically. Corresponding with the latter period a large number of cases have been observed and reported upon in almost every county in this country and I have reason to believe that Lancashire is no exception. The foregoing would seem to imply that the incidence of the disease is exalted following a wet and sunless summer, such as that of 1924 or 1931. Indeed, such a seasonal incidence in the cattle in Herefordshire is a fact. Of the 47 cases which form the basis of my remarks, two occurred in November, two in December, 1931, eight in January, four in February, 16 in March, five in April, eight in May, one in June, one in July, whilst the months of August, September and, so far, October, have not provided a case.

Table 1

	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1931 ...	–	–	–	–	–	–	–	–	–	–	2	2
1932 ...	8	4	16	5	8	1	1	0	0	–	–	–

A peculiar feature of the incidence is that I have not observed convulsions in the male, entire or emasculated, and that 66 per cent. have occurred in dairy cattle and 33 per cent. in beef cattle. For the moment one might digress to say that an allied condition, milk fever, is rarely seen in beef cows.

It is interesting to note at what period of the animal's life the symptoms are manifest. Two of these cases were shown by heifers in

* Presented to the Lancashire Division, N.V.M.A., at Manchester, October 26th, 1932.

Table 2.

Total.	Dairy Cattle.	Beef Cattle.	Œstrus.	Pregnant.	Puerperium.	1st or 2nd Œstrus after Pregnancy.
47	31	16	2	3	21	21

œstrus, three were in pluriparous females during the later stages of pregnancy, 21 in the puerperium and 21 at the first or second œstrus after parturition. In four cows, included in the latter figure of 21, convulsions were noted at the first œstrus subsequent to an attack of milk fever with successful treatment.

I have tried to classify the symptoms and find that this may be so done under three headings:—

(1) Prodromal.
(2) Convulsions.
(3) Paresis.

The prodromal symptoms may be ushered in by anorexia lasting several hours or days during which the animal is off its food and shows a varying intensity of hyperæsthesia, especially to sound or touch. The muscles of the eye may be found to be twitching and photophobia is in evidence. The temperature varies from 107° to normal according to the precipitancy of the attack. Respirations are increased, in some cases easily recognised as blowing, and the gait is strange and incoördinated. Lowing is not an infrequent expression, succeeded by tetany with a varying degree of trismus and foaming at the mouth. Deglutition is interfered with and some animals appear as if trying to eructate. In these cases if the stomach tube is passed some of the rumen content is returned. In some cases the head is held high with pronounced opisthotonus. Such cases of tetany, if untreated, quickly manifest the convulsive state wherein the animal goes down broadside and makes excessive movements with the limbs as if trotting; there is also incessant movement of the jaws. The convulsion may be of long or short duration and the animal may rise only to have another convulsion at a varying interval. In a number of cases this convulsive stage is followed by paresis. These are the most perplexing cases and tend to have a recumbent period of 10-14 days or more. True coma is conspicuous by its absence, but a few cases show intervals of a semi-comatous condition and have a preference for comfort on one or other side, and a severe deflection of the head, particularly to one side.

Mortality in the series of cases now under review was 40 per cent. Death may occur in the convulsion, particularly in those cases where the symptom complex is of a few hours'

duration only. At autopsy the main characteristic lesions I have observed are blood extravasations into the pleura, pericardium, and a discoloration of the lining membrane of the fourth stomach in those cases where death has occurred early. Autopsy of the paretic and recumbent cases of some duration revealed the muscle lesions of Wilson. In one case the head of the femur was torn out of the acetabulum. Intercurrent infections, such as tuberculosis and Johne's disease, were not encountered, but fluke infestation was present in a majority of *post-mortem* examinations.

I would like here to discuss the reversal of the sequence of these symptoms, for this has a very distinct bearing upon the diagnosis. One is not always called in at the convulsive stage, where diagnosis is fairly easy. In a small percentage of cases, including all those pregnant, paresis occurred first, to be succeeded by anorexia and hyperæsthesia. In cows at the puerperium and wherein paresis is primary and the convulsive state tardy, confusion of diagnosis is likely to arise. The confusion, of course, is with milk fever. Provided recovery takes place after inflation of the udder no harm may ensue, but it is otherwise in some cases, especially where calcium gluconate has been used; convulsions and death may supervene. The slightly above normal, normal and subnormal temperature of these cases is not always of decisive help. The character of the respirations, hyperæsthesia and the absence of coma help one to decide. The subsequent history of the case will most certainly indicate the correctness of the diagnosis. Tetany is quite often a concomitant of milk fever, but when, as in untreated milk fever, tetany is followed rapidly by anæsthesia of the cornea, moaning respirations and coma there can be no doubt. Likewise, where the tetany is followed, either quickly or tardily, by convulsions there can be no doubt. In actual fact, around this point of convulsion[1] and coma lies the dividing line of these two allied conditions, milk fever and eclampsia, as I venture to suggest some cases of this toxæmia which I have so inadequately described to you this afternoon should be called. I would suggest for your serious consideration and discussion that this toxæmia, particularly when occurring during pregnancy or in the puerperium, is the long lost eclampsia of cattle, and furthermore that it has been shrouded by the intense investigation of milk fever, and that the failure of calcium gluconate to effect recoveries in this toxæmia has precipitated the clinical differential diagnosis.

Convulsions[2] are said to occur in plumbism, accompanied by frenzy and bellowing. I have no clinical experience of lead poisoning, but perhaps there may be amongst you those who have and who are capable of giving a clinical differentiation which I trust will be forthcoming in the discussion. Frenzy and bellowing, in that they are absent in milk fever and this toxæmia, might suggest a commencement. Naturally you will expect me to advance adequate reasons in support of the contention of eclampsia. Very many blood samples from cases of milk fever and cows in the convulsive state without coma have been the subject of biochemical analysis. Sjollema[3] writing under "Nutritional and Metabolic Diseases of Cattle" on "Grass Tetany" in an article contributed to the *Nutrition Abstracts and Reviews*, Vol. 1, No. 4, April, 1932, describes, as seen in Holland, a condition which, from his description, leaves no doubt upon the mind of anyone experienced in the syndrome now under discussion, that the two are one. Dryerre[4] also has examined many blood samples taken from cases of lactation tetany occurring in Herefordshire. The symptoms described by him and communicated by practitioners in Herefordshire do not include convulsions. It is self evident that he has been misinformed, and the rest of his description leaves no doubt that he is dealing with the same clinical entity. The essential result of Sjollema's biochemical work is to find a serious alteration of the calcium : magnesium ratio.

1. Normal for cows	$\frac{11}{2} = 5{\cdot}5$	approx. 6	
2. Grass tetany (convulsions) ...	$\frac{6{\cdot}5}{{\cdot}5} = 13$	approx. 13	
3. Milk fever	$\frac{4}{2} = 2$	approx. 2	
4. Magnesium narcosis	$\frac{11}{11} = 1$	say approx. 1	

Where the resultant coefficient is high there is a corresponding high degree of nervous excitability. Where it is low the senses are dulled (Sjollema). The low magnesium content in the findings of Sjollema and Dryerre is the main biochemical contribution to the elucidation of this problem. Sjollema states that this low magnesium value is a feature not found in human tetany. Taking Dryerre's figures we find:—

1. Normal ...	$\frac{Ca}{Mg} \frac{11}{1{\cdot}9} = \frac{}{9{\cdot}3} = 6$	approx.	
2. Lactation tetany ... (convulsions)?	$\frac{}{0{\cdot}39} = \frac{}{7} = 23$	approx.	
3. Milk fever	$\frac{}{1{\cdot}9} = \frac{}{11} = 3{\cdot}5$	approx. say	
4. Magnesium narcosis	$\frac{}{11} = 1$	approx.	

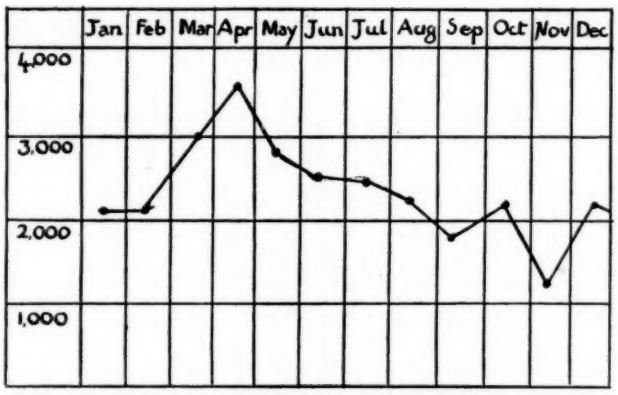
McDonagh[5] finds the normal calcium/magnesium ratio in human blood approximately 3.

$$\text{Normal} \quad \ldots \quad \ldots \quad \frac{\text{Ca}}{\text{Mag}} \quad \frac{10}{3} = 3 \text{ approx.}$$

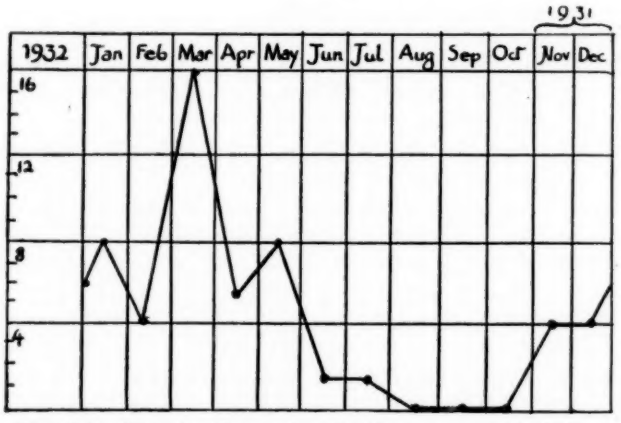
It would be extremely interesting to have the results of the examination of human blood in cases, respectively, of tetany and eclampsia. Fraser[6] suggests that the *Vibrion septique* may play a part in the etiology. If it be true that[7] clinically and on autopsy there is no macroscopic differentiation between infection of cattle with the *Bac. chauvœi* and the *Vibrion septique*, then most assuredly the *Vibrion septique* plays no part in the production of this toxæmia. Just how this low magnesium value is brought about remains unexplained. I would suggest that it is a disease brought about by an altered concentration in the blood plasma at these particular crises: since it is confined to females and in them at œstrus, pregnancy, parturition, the puerperium or the subsequent periods of œstrus, that it is a toxæmia of œstrus, pregnancy and of the puerperium. A colleague[8] of mine, with my complete approval, gave in the *Veterinary Record* a description of the blood plasma changes as outlined by McDonagh[9] for similar toxæmias in woman. I have recently perused Wooff's statement, which is substantially correct except for the low magnesium values of which neither he nor I were aware at the time of writing. In biology, magnesium bears the same relationship in plant life to chlorophyll that iron does to hæmoglobin.[10] Sunshine is essential for the photosynthesis of chlorophyll and it may be that the magnesium content of grass is low after a winter followed by a sunless summer. Lack of sunshine on the skin of animals passing through such a period might lead to a shortage of vitamin D. As an adequate supply of vitamin D is essential for the maximum mineral absorption from the contents of the small intestine, such animals might have a low assimilation of a relatively low magnesium intake. The antineuritic vitamin B_1 might also play some rôle in the etiology, since in rabbits, pigeons and rats B_1 avitaminosis leads to convulsions. Perhaps I have said enough to quicken your interest as clinicians in the treatment of such conditions.

In my early days magnesium sulphate and chloral hydrate and potassium bromide, when administered early, seemed to suffice. In 1924-5 such was not the case and a long line of failures led me to the adoption of inflation of the udder, or injecting subcutaneously air in non-lactating patients, the hypodermic administration of camphor and the introduction of sodium chloride and formalin by means of the stomach tube. This blunderbuss treatment, with the addition of treacle and in some cases the intravenous injection of calcium lactate, iodine or glucose, was the main line of treatment in this series of cases. Some animals, after excitability had passed, received half-an-ounce of sodium phosphate three times a day with good effect. In June, 1932, Sjollema's article came into my possession and it so happened that I had on hand a recumbent case of 14 days' duration. This cow received several intravenous injections of 3 dr. magnesium sulphate in 15 c.cs. of boiled water, without a dramatic recovery but with no ill effect to herself nor to the site of injection; recovery was achieved but protracted.

With the advent of a full ration of sunshine no more cases are to hand, but I have used the intravenous injection of magnesium sulphate in all classes of animals with no injurious effects. The biochemical findings suggest that magnesium sulphate or, better, magnesium aspartate, administered intravenously early might give good results, particularly when the temperature is high. In the tetanic and convulsive stage magnesium aspartate and calcium aspartate intravenously, accompanied by subcutaneous air or mammary inflation, are indicated. In those cases where paresis follows tetany, and recovery does not ensue from this treatment, and the patient exhibits a preference for lying on one side and hanging of the head,



Graphic Chart: Eclampsia per 100 Deliveries Women—New York Clinic (Kermak)



Graphic Chart: Cases in Cattle as recorded in this article.

oxygen subcutaneously and glucose intravenously should be tried to break up the thrombus causing hemiplegia. Where paresis is the initial symptom magnesium sulphate or magnesium aspartate intravenously and oxygen subcutaneously should yield good results.

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Discussion

Mr. H. S. CALDWELL, opening the discussion, said: It is a pleasure to rise to congratulate Mr. Barker on the excellence of his paper. When I was asked to open the discussion I anticipated hearing something new and stimulating, and I am sure we will all agree that we have heard a very helpful paper.

Illnesses in cows, characterised by convulsions, have been described under innumerable names, but it would be advisable to use some simple common name, until the problems of etiology, etc., have been solved, when a scientific christening may be celebrated. I believe that eventually the nomenclature of the nervous disorders of cattle will be greatly simplified.

Cases of lactation tetany, convulsions, or whatever we call this syndrome, have occurred sporadically in North Staffordshire as in Herefordshire. This year 13 cases have been my share—not many more than in previous years. The monthly incidence was: January 1, February 0, March 2, April 2, May 6, June 2, and none since. The most prolific month was thus two months later than Mr. Barker records, and I would like to ask him if he can suggest a reason.

The number of sudden deaths reported as suspected anthrax, but negative, was also more than usual during this period.

In my experience, the condition generally occurs in cows which have had at least 3 or 4 calves, and I remember only one heifer affected. When within a few days after calving, the onset is usually sudden, often when milking or just after, and the attack of the acute type. In one such case the temperature was over 108° and sweating so severe that a large shippon was filled with steam. If death does not soon supervene, the patient may remain for days in a state of paresis. Relapses, after apparent recovery, are common and often fatal. Injuries, such as broken horns, are frequent.

Of my thirteen cases this year, only three made complete and lasting recoveries. The mortality was therefore 77 per cent., comparing unfavourably with the essayist's results (40 per cent.). Only cases exhibiting typical convulsions are included in these figures. Several cases of doubtful type and characterised by nervous excitability have occurred and recovered quickly under treatment. Perhaps these were mild cases of the disease under discussion.

The *post-mortem* findings are well described and seen to be in general agreement with the reports of other contributors to the literature.

Mr. Barker discusses the differential diagnosis from milk fever, and mentions the convulsions of lead poisoning. I have never come across the latter, but Mr. Trigger, my principal, tells me that blindness has been the most notable symptom in the cases he has seen. Convulsions may also occur in plant poisoning, in enzootic and tuberculous meningitis, and after lightning stroke. Mr. Powley has pointed out the similarity to bracken poisoning.[1] White described an outbreak in five cows with similar symptoms in December, 1930. Two acute cases died and three milder cases recovered. It was ascribed to feeding on too narrow a protein ratio; no further cases occurred after changing the food. The possibility of poisoning was not completely negatived.[2] Tapken saw, in a cow, an attack of convulsions lasting for several hours, due to the noise made by firing a gun.[3]

The essayist suggests that we are discussing the long-lost eclampsia of cattle. Several disorders seem to have been disposed of in older works under that heading, and the resurrection of the title may lead to misunderstanding. There are marked differences between convulsions in cows and puerperal eclampsia in women; for instance, 25 per cent. of the latter cases occur before and 50 per cent. during childbirth.[4] In females of the other species a condition more like puerperal eclampsia is occasionally seen.

Recent reports seem to be in agreement that there is a disturbance of the Ca-Mg ratio, as described in the paper. To bring this about various factors have been suggested—Mg deficiency in food, low barometric pressure, sudden change from indoor to outdoor life, avitaminosis, etc.

I have not studied McDonagh's works sufficiently to express an opinion upon their value, but, since he says that there is only *one* disease, no doubt this condition is amenable to explanation by his hypothesis.

Mr. Barker records the coincidence with œstrum. This factor has not, to my knowledge, been pointed out before. In discussing the disorder most contributors agree on the common occurrence within a couple of months after calving, and it is probable that the convulsions have coincided with the first or second œstral periods. Perhaps a cow may be in a dangerous state of Ca-Mg imbalance and the onset of œstrum precipitates the convulsions.

In "The Principles and Practice of Veterinary Medicine" (1874), Williams described an eclamptic condition during œstrum in two mares, under the heading of hysteria.

Œstrual disorders, apart from nymphomania, must be rare, and literature on the subject scarcely exists—compared, for example, with that on the disorders of menstruation.

The essayist suggests the possibility of a toxæmia of œstrum. There are many references in superstition and folklore to indicate the speculation of a toxic nature of menstrual discharges. Pliny stated that they would make a dog mad and cause mares to abort. A menstrual toxin was described by Schick and studied further by

Macht and Lubin. Of course other workers have denied its existence.[5] It is interesting to note, in passing, that a rise of temperature at the menses is often the first indication of commencing tuberculosis in girls. It is not wise, however, to draw too close an analogy between menstruation and pro-œstrum.

Many modes of treatment have been advocated, from doing nothing at all up to udder inflation, sedatives, purgatives, bleeding, etc. I found calcium glaconate useless in these cases and it would now appear to be contra-indicated, unless injected along with magnesium salts. I always inflate the udder, but this is not often of much benefit, as the mortality rate indicates. In some of the cases this has already been done by the owner before we arrive on the scene.

Mr. Barker advises Mg aspartate and Ca aspartate, with udder inflation, glucose, oxygen subcutaneously, etc.

Sjollema first advised Ca salts,[6] later Ca chloride and Mg chloride intravenously.[7]

Dryerre details a solution of Mg lactate, lactic acid and neutral sodium phosphate.[8]

It is hoped that these methods will be thoroughly tried out when opportunity occurs.

Darkness, quietness, sedatives in drinking water, and great gentleness in preventing injury, are useful adjuncts. Cold compresses to the head seem to afford some relief in violent cases.

If œstrum plays any part in precipitating the convulsions, thyroid and corpus luteum hormones may possibly be indicated.

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Mr. J. Holroyd expressed his gratitude to Mr. Barker for giving his experience of "Hereford" disease. He wanted to know if Mr. Barker, coming originally from Nelson in Lancashire, would say that the disease he mentioned was the same as that known as "staggers" in Lancashire. From conversations he had had with veterinary surgeons in different parts of the country, he gathered that the condition recognised as "staggers" in Lancashire was not prevalent everywhere. Twenty to twenty-five years ago the disease appeared to be more severe than at present, the percentage of recoveries being much higher. In the old days, treacle, bromide, etc., were given, but the mortality was about 60-70 per cent.

Some years ago he was struck with the similarity of the cases to milk fever, and concluded that it had some connection with œstrus. He tried udder inflation and got a remarkable increase in the number of recoveries. Latterly, in addition, he had given calcium gluconate or calcium dextrose, or a combination of the two, and he thought that had been beneficial.

Mr. Holroyd quoted a recent case of a cow, six weeks calved, in a convulsion and showing the usual symptoms. He inflated the udder, administered calcium, and could see an improvement in ten minutes. Next morning the cow was apparently normal. In his opinion, a similar case, with the treatment of 20 years ago, would have had a fatal issue.

He had never seen a cow with true milk fever in a convulsion, and he thought that was the only difference between that condition and "staggers," Hereford disease, lactation tetany, or whatever name was used. He agreed with Mr. Barker that in many cases the acute symptoms passed and the animals were left in a paralysed condition. They got down and would not rise or turn over. If the head was turned, giving the appearance of a dislocated vertebra, he thought it was a serious sign. In some instances primary paralysis was followed by a convulsion. Inflation of the udder was often all that was necessary to put the cow on her feet again. He thought there was still a lot to be learned about the condition.

With regard to lead poisoning, Mr. Holroyd described a case which had come to his notice recently. One cow had died, and from the history he thought the trouble was tuberculous meningitis. A week later he was called to see an animal at the same farm. The symptoms shown were aimless walking, blindness, and other signs as of brain derangement. He suspected lead poisoning, although there was no blue line round the gums. On enquiry he was told that a new iron pipe had been put into a reservoir close at hand and a joint had been run round with lead, and there were patches of melted lead on the ground. The animal died, and on *post-mortem* examination the reticulum was found to be full of metallic lead. It was a strange fact that only the two animals showed symptoms, although there were six heifers and some sheep in the same field.

With regard to the calcium injection, he thought that a larger quantity of water might be used; he would use a pint rather than the 15 c.c. mentioned by Mr. Barker.

With reference to temperatures, in a majority of cases there was no elevation of temperature, and he considered a high temperature a serious symptom.

In conclusion, Mr. Holroyd said that he was not satisfied that milk fever was due to a calcium deficiency, although, of course, there was such a deficiency constantly present. There was still a lot to be learned about the calcium and magnesium content of the blood.

Mr. W. F. Aston (visitor) thought the paper should have been more descriptive. He was interested in Mr. Holroyd's remarks, but he differed from him in that he was quite certain that milk fever and "staggers" were entirely separate entities. The difference in the early stages was that in a convulsion case the head swayed and was the least controlled, whereas in a milk fever case, the lack of control was in the hind quarters.

A high temperature he did not consider important if there were no convulsions, but if there were convulsions, he regarded a high temperature as a serious symptom. True convulsions did not occur in true milk fever.

In his practice he had both dairy and beef cattle to deal with, and he found that dairy cattle responded to treatment better than the beef variety. He had had as many as 18 cases in one week, and he thought it was a much more serious condition than simple "staggers." The most serious form occurred before calving, and the percentage of recoveries in these cases was small. He had tried many forms of treatment, including inflation of the udder and calcium, but he had not found any effective treatment as yet. On *post-mortem* examination, in about 50 per cent. of the cases extensive meningitis was found, with about 2 oz. to 2½ oz. of fluid in the meninges. In

the acute cases where it often occurred that the animal was dead before he was called in, he had found bright red rose patches in the fourth stomach. These were about the diameter of a lead pencil or a little larger. The lining membrane of the rumen was bright red underneath.

Mr. A. B. Mattinson expressed regret that the attendance at the meeting was so poor, especially in regard to the number of practitioners who were members of the Lancashire Division. He thought that when a subject of this importance and interest to the majority of general practitioners was being presented to them, especially in one of the largest cattle areas in the country, there would have been a very much greater number to welcome Mr. Barker.

He could not agree with Mr. Barker that lack of sunshine was responsible for the prevalence of "staggers." He was a farmer on his own account and he was quite sure that 1931 was not a bad summer, even if it was not ideal for hay. It was a peculiar thing that, although he practised in comparative proximity to Mr. Holroyd, his experience of 30 years was not as Mr. Holroyd had said, that "staggers" was an ever-present condition. Almost until the outbreak of war, staggers was unknown in his practice, and he could only recall one case prior to the war.

He considered that a subnormal temperature indicated milk fever. He also disagreed with Mr. Holroyd with regard to convulsions in milk fever —he thought that all milk fever cases started with convulsions. In his experience of the condition known as "staggers," marked convulsions were not common and he thought it was possible, or even probable, that "staggers" and the condition called Hereford disease were not the same. On *post-mortem* examination, he had found acute gastritis in every case, and he had wondered if the gastritis was not the primary condition.

There were many general practitioners who never used calcium in milk fever and Mr. Mattinson thought that, although there was a deficiency of calcium, they would rapidly recover with inflation of the udder. A general practitioner had told him that he had treated 900 cases of milk fever, and was satisfied with the inflation treatment and intended to keep to it.

Mr. Barker had mentioned *Vibrion septique*, and he was reminded of a case he was called to the previous year. The cow was down, and although eating well, could not get up. After two or three days there was pronounced dribbling of the urine, and slaughter was recommended. The carcass was cut down by the local meat inspector because she had black-quarter. Mr. Mattinson saw the carcass, which had a condition resembling black-quarter, but he did not think it was so. The meat inspector said he had had another similar case, and within a week he saw a third case. They were all aged cows, and Mr. Mattinson thought it was an interesting experience.

With regard to hemiplegia, he asked if Mr. Barker considered this condition had anything to do with thrombi. Some cows would not get up although there appeared to be nothing wrong with them. Was it possible that thrombi were the cause?

He did not agree with Mr. Aston as to the possibility of defining immediately, from the symptoms shown in the early stages, whether the case was going to be true milk fever or convulsions.

He would like Mr. Barker to give some information about the salt of magnesium other than the sulphate, which he mentioned in the paper.

Mr. Mattinson concluded by saying he had learnt a great deal, and if he had disagreed with some of the speakers in his remarks, it was only with a desire to learn.

Mr. G. Mayall thought that convulsions in cattle were on the increase, and asked if that was to be wondered at when probably 90 per cent. of them were cross-bred and a number not even first crosses?

They all knew that convulsions might be of three kinds—true epileptic convulsions due to some organic disease of the brain, and often hereditary; reflex epilepsy, dependent on irritation of some part of the digestive canal (mouth, stomach, or bowels), and perhaps sometimes the kidneys; puerperal convulsions associated with parturition and also those associated with œstrus.

In recent times a good deal of knowledge in regard to convulsions might be gained from a consideration of the physiological effects produced by electricity in the stunning of animals. A study of this field might also throw some light on the best therapeutic and materia medica measures to be employed in the treatment of convulsions. He believed that one should clear out the digestive tract by various well-known laxatives, stimulants, and purgatives, and at the same time give full doses of camphor hypodermically. Why camphor? some would ask. The answer was because camphor stimulated the local circulation and was a sedative to the nerves after preliminary stimulation—a very useful drug in collapse, torpor, and convulsions, but often overlooked.

Mr. E. H. Curbishley expressed pleasure at seeing and hearing a worthy son of the County of Lancashire.

A large number of terms had been used, presumably describing the same condition, and he would like to ask Mr. Barker if grass tetany was just another name for the same disease. He had seen a large number of cases of grass tetany, and they usually occurred where the animals were turned out too early on to well-nourished pastures. The history was that the animals were turned out to grass in the first day or two of spring, and two, three, or more usually went down with the condition. He suggested that the other animals be kept up until well on in the day when the grass was dry, that they had a feed of dry hay before turning out, and that they should be brought up at night. This seemed to cure the trouble.

He presumed that these different names were descriptive of the same condition. In eclampsia, urine examination might enable the practitioner to prevent the development of the disease, and he would like to ask Mr. Barker if he had ever undertaken the examination of the urine, and was it possible that quantities of the various chemicals were being excreted through the kidneys? If one got impaired digestive processes, there was usually a number of animals with hyperæsthesia followed by convulsions. Would these cases, if allowed to go on, come under the condition known as lactation tetany? One could observe symptoms of these conditions early.

Mr. Curbishley gave a case of lead poisoning which had come under his notice some time ago. A load of brewers' grains was brought to a small herd of cattle and, after one or two meals, the animals were all taken ill. Convulsions developed, and they all died. It was discovered later that the grains had been conveyed in a wagon which previously contained red lead and had been contaminated by that means. He also remembered the case of a Jersey cow that had followed painters and had licked up the splashes of paint, with a fatal result.

XUM

The Reply

Mr. Barker, in reply, expressed his pleasure at being present in his native county in an attempt to stimulate a discussion on a subject which, he thought, was of importance to all veterinary surgeons. He would say that, despite the mix-up in the nomenclature, they were all talking about one condition. The condition, known by so many names, was the same in that the calcium magnesium ratio of the blood was exalted, and if as a result of bio-chemical analysis one could find the disturbance of this ratio and take steps to remove it, he thought it was a distinct step forward. A further step forward was to recognise clinically what might be found on analysis.

A high co-efficient was accompanied by excitability, which might be manifest in different ways such as flickering of the eye-lids and fibrillation of the muscles of the face. A shot from a gun might cause an animal to go into convulsions, but the real factor was that the blood plasma of the animal was in a condition of altered balance, so that one of many outside factors would be sufficient to set up convulsions.

For many years after he moved into Herefordshire, he had no difficulty in controlling those sporadic cases with the old forms of treatment, but in 1924 and 1925 he lost at least 60 cases, and this caused him seriously to consider an alteration of his line of treatment.

There should not be any necessity for confusion of terms. In all of them one could reach common ground, which in this condition was hyperæsthesia to sound or touch. A large percentage of the cases, if left, went into tetany in some form—perhaps a tetanic contraction of the hind leg muscles. He also had observed tetany preceding coma and tetany preceding convulsions. The earlier the treatment was given, the higher the percentage of recoveries. If magnesium sulphate would cause a recovery in a tetanic condition which could be diagnosed as leading to convulsions, he thought it represented a definite advance in therapeutics. He had had cases in heifers that had never been to the bull and also in pregnant animals, and he had seen a number of cases occurring at parturition.

He regarded the character of the respirations as the chief aid to a differential diagnosis where tetany was in evidence. In those cases of tetany preceding coma the rate was slower and often accompanied by an expiratory moan. In those cases of tetany preceding convulsions the rate was accelerated, moaning was absent, and respiratory distress was very pronounced, giving an anxious anticipatory expression.

He had had no difficulty in getting students and others to distinguish the character of the respirations, and he agreed with Mr. Aston that it was possible to determine what kind of condition was going to follow the tetany. He could see no difference between the condition as seen in Lancashire and Hereford, except that in the beef cattle the symptoms were more precipitate.

In reply to Mr. Holroyd, Mr. Barker said that the reason he did not use a large amount of water for his injection was that it was difficult to get a quart of water into the jugular vein of a heifer lying on the ground. He used a special hypodermic needle and found 20 c.c. effective. Mr. Holroyd had rightly raised the question of why calcium therapy was successful in some cases. Milk fever should not be regarded as a calcium deficiency disease, rather as a toxæmia of the puerperium. When blood was taken from the jugular vein of milk fever cases and the analysis showed hypocalcæmia, it indicated that the calcium-bearing bodies in the plasma had gone out of circulation. Calcium, acting as a metal when injected into the blood stream, returned these bodies to the circulation. Inflation of air or oxygen into the udder had exactly the same effect, so that when blood was taken from treated cases the calcium content was normal even when no calcium had been used therapeutically. The action of calcium in these eclampsia cases was entirely that of a metal replacing the energy which had been dissipated as heat.

He did not think that calcium therapy was specific for this particular form of tetany succeeded by convulsions. It might be so for milk fever tetany and coma, but magnesium was the metal of choice for the condition of tetany followed by convulsions. He would rather refer to milk fever as coma, as it was the best example of true coma in veterinary practice. He would like them to consider coma and convulsions in other species. Mr. Barker went on to say he had seen the condition of "ship's staggers" in mares and mules, principally during the war during transit from America, and that the condition was very much like milk fever in cows. Magnesium sulphate was given orally and chloral hydrate subcutaneously to these animals on board ship. He had also experienced a condition in mares in England, a few hours prior to parturition, with hyperæsthesia and tetany. Once such cases became recumbent the prognosis was grave. So that in equines one found a reversal of the meaning of the nomenclature—"ship's staggers" being applied to the condition which more closely simulated milk fever in bovines. Here also it was better to adhere to coma and convulsions.

Eclampsia occurring in women appeared to be a similar condition to the one under discussion and, according to literature on the subject, in New York magnesium sulphate was used in the treatment. "Eclampsia" came from a Greek word meaning "flash," and in view of the sudden onset the term was quite a good one. He had tried to obtain literature on the calcium magnesium ratio of the blood plasma in cases of eclampsia in the human subject, but had failed, and it was possible that the work done by Sjollema and Dryerre was in advance of the work done in human medicine.

In cases where the cow would not rise, if there was a high temperature, he regarded this as very serious.

Answering Mr. Curbishley, Mr. Barker agreed that blood testing was valuable and that urine testing along with the bio-chemistry of the blood plasma would be even more valuable.

In reply to Mr. Mattinson's question about the salt of magnesium other than a sulphate, which he had mentioned in the paper, it was magnesium aspartate, the salt of magnesium and aspartic acid. The aspartate, either magnesium or calcium, would be a better form of drug than either magnesium sulphate or calcium gluconate and would not damage tissue either subcutaneously, intravenously or intramuscularly, so avoiding any possibility of sloughing at the seat of injection. The cost, however, was excessive, relatively with the cost of magnesium sulphate and calcium gluconate.

The virus of rabies occurs in the placenta and is transmissible, according to Harrmann. The virus also occurs in the brain of a fœtus of fatal cases of rabies. Rabies virus from a fœtal brain is generally of decreased virulence.—*Bio. Abst.*

CONDITIONS ASSOCIATED WITH PARTURITION IN THE COW*

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STRATHAVEN

When our Chairman, Professor Robb, sent me a written request about a month ago to take part in to-day's proceedings, I felt that my past indebtedness to him was too compelling to admit of a refusal on my part, notwithstanding that the programme he suggested was one befitting a practitioner of wider experience than my own.

He put the following problems before me and I think you will agree that if I could indicate their ideal solution—a task that is quite beyond me—you would be more than a little indebted to me.

His problems included:—

(1) Should all cows be cleansed?
(2) When should one cleanse a cow?
(3) Should douching of the uterus be carried out?
(4) Are pessaries of any value in the treatment of an infected uterus?
(5) What is meant by so-called retention of the second cleansing?
(6) Treatment of metritis, cervicitis, sterility, etc.
(7) Eversion of the uterus.

That is only a part of the somewhat formidable list submitted and I am inclined to presume that, although Professor Robb has over forty years' experience behind him, and although he carries the daily responsibility of teaching the "young idea," he finds in the scattered fragments of the text he has given me some of the thorniest difficulties that beset the life of the cattle practitioner. If this presumption is correct in the case of one of such great experience, what can he or you expect from one who is making his first attempt at addressing a veterinary meeting?

I think it only fair to you, however, that in attempting my task I should state without fear my considered opinions on some of these matters, however unjustified or even foolish they may seem to you to be.

If we deal first of all with metritis in dairy cattle we will find its omnibus quality as a subject entails the consideration of several of the questions set.

I hope to confine myself in great measure to what is essentially practical in the field work which we who are cattle practitioners have to undertake daily.

Metritis, or inflammation of the uterus, is an affection that varies greatly in different cases within wide limits of virulence. It may be said that the most irksome part of a country practitioner's work is associated with diseases and disorders of the female genital organs and especially metritis.

It is probable that uterine affections inflict greater loss on dairy stock owners than do the affections of all the other organs put together, so great is the loss caused by metritis in actual deaths, in sterility, in still-born and immature calves, etc.

Its causes are numerous, but however set up, the quality of bacterial infection dominates the whole cause of the affliction. *Streptococcus pyogenes* is the most common organism concerned and can occasionally be obtained in pure culture, but mixed infection is the rule, including staphylococci, *B. coli communis*, etc.

Exciting causes of septic metritis include improper handling at the time of parturition, the use of infected ropes and instruments, the adverse effect of carrying and giving birth to a dead and perhaps decomposing fœtus, premature births of every kind, especially if followed by retention of the placentæ. On the other hand, improper care and housing, if these involve exposure to draughts inducing chill, may readily set up the disease in the apparently normally-calved cow.

In the majority of cases there is retention of the afterbirth and we are called on to decide whether it should be removed manually and, if so, at what hour after calving. In my view, there is individual character in every case, and there can be no golden rule applied. Cows that part with their placentæ within 24 hours are not usually regarded as having retained the membranes and professional aid is not usually sought until after the lapse of that period of time.

It is my experience that very many cases can be easily and safely cleansed on the second day, that is, before decomposition has become established in the dead membranes and in such cases one finds the capacity of the uterus decreases markedly during the manipulation and there is really no need for douching. The great majority of cows that have gone past their reckoning date and yet retained their membranes belong to this class, but in other cases such early removal is impossible and one has to wait two or three days before it is possible to deal satisfactorily with them.

As I have stated, however, each individual case presents to the mind of the manipulator its own problem. He will therefore act in keeping with the dictates of experience and according as the cow looks complacent and well or feverish and restless—giving due consideration, also, to the intra-uterine conditions, the capacity of the womb, the nature of its fluid

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content, the intimacy of the cotyledonary attachments and whether the whole or only part of the area of the uterus still holds the membrane.

The type of case which benefits most by removal of the membranes or, put in other words, in which health is almost unaltered by her experience of the operation, is the cow which has carried her calf to full term or beyond it. Such cases can be dealt with most easily at 24-48 hours after calving and no further treatment is necessary unless it be the introduction of an ounce or two of a suspension of iodoform in oil. Generally speaking, it is not beneficial and is often harmful to remove the membranes when the cotyledons are greatly enlarged, or when bleeding follows the handling of them, or when the uterus is so tender that the animal resents any intra-uterine manipulation and begins to strain.

After abortion the retained diseased membranes are sometimes easily removed, because we find them almost entirely loose in the womb with but few attachments to the cotyledons, and in many such cases we find many exfoliated cotyledons floating in the contents.

A grave prognosis should be given in every case where we find the patient showing cardinal symptoms of acute septic metritis, *e.g.*, the characteristic odour, weak rapid pulse, shallow frequent respirations, high temperature, almost complete suppression of appetite and milk secretion, uneven surface temperature, etc., and when manual exploration reveals large capacity in the uncontracted, ballooned womb, containing a large quantity of an evil-smelling, dark-coloured, thin fluid which will very readily inflame the skin of a sensitive human arm.

The handling of any cases approaching to such grave conditions should not be undertaken without warning the owner that his cow is in a precarious condition and that she may readily die with or without treatment.

When the membranes are easily removed and the uterine walls have contracted well during the manipulation and the animal is apparently in good health, douching is not called for and may even be harmful. Too often the irritative effect of disinfectant solutions used upsets the cow. On the other hand, when there is present an abundant purulent or blood-tinged fluid with some degree of fever and a flaccid dilated womb, douching with syphonage has an almost immediate salutary effect in reducing the temperature and restoring appetite, and the douching should be repeated at intervals until the animal seems able to void the discharge naturally.

I have on occasion been called to a case from 6-14 days after calving, because the cow has gone off colour—a case in which no shred of fœtal membrane is visible and the os uteri is so contracted that the serious condition of the womb might readily escape suspicion as the cause of the animal's illness. The high temperature and frequent pulse indicate the need for examining the womb *per rectum*, when it is found to be greatly distended.

In such a case one must proceed to manipulate and open the os, which takes up a deal of time, and one is not to be dissuaded despite the fact that when the hand is first introduced into the vagina it becomes smeared with a clear tenacious mucus that is normally present in the recently-calved healthy cow. When one has contrived to introduce the hand through the cervix, which then grips the wrist, it is common to find from 20-40 loose cotyledons floating in the fluid contents of the womb.

Much careful douching and syphonage with non-irritating solutions, such as physiological salt solution, are necessary to produce the best results in such cases, and this process should be repeated once or twice on subsequent days. The use of strong disinfectant solutions is ill advised. They usually do harm and, in any case, are readily neutralised in the septic uterine contents. For the same reason, one cannot expect much good to result from the introduction of the antiseptic pessaries in common use. Such cases are benefited by the administration of large doses of acetanilid and by the repeated application of a blanket wrung out of hot water, applied over the back, and followed by the application of a thin solution of mustard, and well secured clothing.

If antiseptic solutions are to be used during and after the removal of fœtal membranes they should be non-irritant and in weak solution. Lysol is probably the agent in most common use, but saline solution, eusol, perchloride of mercury, and potassium permanganate have their devotees. Acriflavine, 1 in 10,000, or tincture of iodine in the strength of 2 ounces to a gallon of water are probably best of all, but their cost is prohibitive except in really serious cases.

In many cases I introduce nothing into the womb but a suspension of iodoform in oil, which I regard as a great preventive of metritis and exceedingly useful in all cases where the vagina has been bruised or torn during parturition. I have found that in most cases the use of from ½—1 ounce of iodoform in oil inhibits the onset of necrosis in the vagina which, if it does occur, sometimes extends to the uterus, with fatal consequences. A mixture of equal parts of camphor and carbolic crystals rubbed down in a mortar into a fluid state is commonly used in human medicine and is serviceable in our patients. Incidentally, the same mixture affords protection to the practitioner when smeared on his arms during intra-uterine manipulations.

It is my experience that however high the temperature in a case of retained placenta with much septic material in the womb, if the walls of the uterus respond to the manipulation by

contracting on the hand, the removal of the membranes and the adoption of proper douching and syphonage with inert solutions is followed by surprising results in reducing temperature and setting the animal on the way to recovery.

It is of advantage to swab the womb with pledgets of absorbent cotton-wool and then, as before, introduce an oil suspension of iodoform which, in my experience, inhibits septic intoxication better than anything else.

When called to a recently-calved cow that is straining excessively with or without retained membranes, the less local interference that is carried out the better, whether the seat of irritation be uterine or vaginal. In these cases I introduce a tube into the vagina and pour through it 4 ounces or so of a 1 in 8 suspension of iodoform in oil, apply hot blankets in the manner already referred to, give a dose of morphine subcutaneously and leave two full doses of chloral for subsequent use as required.

It is a common experience where the vagina has been much injured during parturition, as is often the case in heifers, that the animal is unable or unwilling to rise and it is equally true that the subject of genital sepsis is prone to bed sores, especially on the outside of the hock and the inferior aspect of the knee, when decubitus is pronounced and nursing is defective. In such cases the stall should be laid with sods from an old lea grass field to provide a soft bed, and enable the patient to rise without slipping.

The medicinal treatment of uterine sepsis is essentially of secondary importance. I attach some importance to the giving of quinine, owing to its accepted reputation as a febrifuge and ecbolic, but I have hitherto made much use of acetanilid in 3iv doses four times daily and have found it very serviceable. On occasion I have administered formalin and salt solution by the stomach tube to counteract intoxication, and in desperate cases have injected a solution of formalin intravenously and saline solution subcutaneously. Some favour medication with sodium salicylate, acid-acetyl-salicylic.

As the appetite is almost always capricious the dainties offered should include greenstuffs, cabbage and green kale blades, fresh grass, pulped turnips, sliced potatoes, oats, oatmeal gruels, bran mash, etc., and small quantities of the sweetest hay.

PURULENT METRITIS

As this is a chronic condition often associated with cervicitis, treatment presents some difficulties.

The os is carried back near to the vulva by means of vulsellum forceps and a special catheter is slowly introduced till it reaches the uterine cavity, when the purulent material, if present, is syphoned off and a quantity of lugol's solution of iodine is injected.

This treatment, if sufficiently repeated, may clear up the metritis, but a large percentage of cases remain sterile.

RETENTION OF THE SECOND CLEANSING

So-called " retention of the second cleansing " occurs when cows have been for some time on artificial foodstuffs and is chiefly manifest after four months of house feeding. It is usually noticed in cows from 7-14 days calved.

The symptoms are lassitude, capricious appetite and decreased milk secretion, temperature normal or slightly elevated, bowels are sluggish and surface temperature is uneven. There is usually present a characteristic sickly odour and taste in the milk, due to the presence of acetone; the condition, therefore, is generally termed acetonæmia. The odour is also exhaled from the cow's skin and breath and is often detectable on opening the byre door. The cow has a tired appearance, has lost girth of abdomen and in some cases constipation is very marked.

Occasionally tetanic symptoms are present, simulating those of milk fever, such as lack of co-ordination in movement, sometimes string-halt and other choreic symptoms, tremors, flickering of the eyelids, grinding of the teeth, etc.

On examination *per vaginam* the os uteri is found to be almost closed. It is usually stated that a vaginal discharge had been noticed up to two or three days before and when this stopped the animal commenced to show the above symptoms.

Nothing is more intriguing than the attempts that have been made to explain the causation of this state of acetonæmia which, in some cases, is followed by an actual state of tetany, more or less marked. Some say the retention of the lochia is primary and that its reabsorption is upsetting to the animal's economy although the material cannot be described as septic.

I am firmly of the opinion, owing to the fact that the empirical treatment for milk fever in my hands yields the greatest good in the treatment of these cases, that they are all probably atypical cases of tetany dependent on the same factors as the so-called milk fever. Basically I regard these as belonging to the domain of dietetics, our lack of accurate knowledge of which hinders the scientific restoration to the deep milker of all that she gives up during lactation.

When, through unbalanced defective blood the central nervous system is excited or depressed and the functions of all organs fall partially into abeyance, it is surely to be expected that the uterus will hesitate in involution and so fail to void its fluid contents while the state of

XUM

lowered vitality exists. So-called retention of the second cleansing is, in my view, but one of the signs of tetany or deferred milk fever.

Treatment.—Some cases recover spontaneously, especially those that are allowed to roam and satisfy their seemingly depraved appetite. Others get over their indisposition without any treatment beyond a radical change of rations, *e.g.*, turnips and straw without concentrates, together with some exercise and daily grooming.

Medicinal treatment varies according to the views of the practitioner and it is a case of "many men, many minds." Some pin their faith to repeated doses of bromide of potassium, and perhaps the choice of this drug may surprise those who have not used it. I have heard, of course, of the vogue it had 30 years ago and even in later days in the treatment of milk fever and tetany, along with chloral. Other treatments include 3ii doses of formalin greatly diluted; large quantities of a solution of bicarbonate of soda; the subcutaneous injection of glucose; tonic mixtures containing carbonate of ammonia, nux vomica and gentian.

In my experience, however, inflation of the udder has proved superior to all other forms of treatment, particularly when there is evidence of neurotic disturbance. When the treatment has proved successful there is generally a profuse uterine discharge of a dark-reddish colour within a few hours.

In cases that have tended to recur two or three times at intervals of ten days or so, and in which one hesitates to treat the udder, the symptoms have given way to the subcutaneous injection of glucose. In all cases a course of tonic after-treatment is advisable.

PROLAPSE OF THE UTERUS

In my experience, such cases occur mainly in the period from February to June, but odd ones are met with throughout the whole year. When called in, we may find the prolapse to be partial or complete.

In the latter case, if the cow be on her feet the length of the organ is sometimes rather surprising and it should be examined for rupture, which readily occurs if the cow has been getting up and down, but she is usually recumbent with the mass lying behind her.

While the chief cause is retention of the membranes which, by their weight, invert the fundus of the uterus, setting up straining, which leads to eversion, these cases are almost confined to roomy cows that have become greatly relaxed at parturition.

A cow that experienced complete eversion in the previous year was unfortunately bred again, and after a very easy calving she immediately everted the uterus to full length with little effort, but the organ was very easily returned through her wide and completely relaxed pelvis.

The condition is almost entirely confined to multiparæ which experienced, with added pregnancies, increased stretching of the uterine and pelvic ligaments. The paralysis of milk fever adds to relaxation and so it is not uncommon that we have to deal with that complaint and eversion of the uterus at the same time.

After a difficult case in an aged cow one must use measures to prevent eversion and they must be effective if the patient is to be left unattended during the night, and especially if the animal is disposed to strain because there has been some injury done to the vagina.

Treatment.—If the uterus has only been everted for a short time there is little need for an anæsthetic before returning the organ. In all other cases the use of an anæsthetic of some kind is very desirable, and in some a necessity.

Until lately, chloroform and chloral hydrate were in great vogue, but epidural anæsthesia is rapidly ousting them. When chloroform is used there is always some struggling and excitement which is objectionable when one is handling a heavy pendulant and easily-damaged uterus. Moreover, under chloroform, tympany of the rumen is apt to occur and prove troublesome. If chloral is used it is best given in a large dose well diluted, by the stomach tube passed *via* the nostril in the normal way, and the cow becomes unconscious inside ten minutes. If preferred, the solution of chloral may be given intravenously. The epidural injection of a local anæsthetic offers many advantages. It is easily done and leaves no bad after-effects. During the pre-anæsthetic period one pays attention to the position and condition of the exposed uterus.

Proceeding to deal with the everted organ, if the cow lies flat on her side and is tympanitic, this must be relieved through the stomach tube or, that failing, by the use of a small trocar and canula and placing the cow on her brisket.

One then contrives to lift or roll the hind part of the cow onto a broad door and when this is lifted up posteriorly and supported by a truss of straw the partial raising of the hind parts of the cow in this way is often sufficient to enable the easy return of the uterus, provided the bulk is not great. It is often worth while to raise the hind parts higher by other measures. A loop of rope is fixed to each leg above the hock and threaded over a pulley attached to an overhead beam, and by this means the hind part of the cow is effectively raised, the back being supported by trusses of straw. In many new byres overhead beams are not available, and temporary uprights and cross beam have to be improvised.

If the membranes are still attached they should be removed before attempting replacement of the everted uterus.

Swab the organ with a mild antiseptic solution and place a clean towel or table-cloth under

it. This is held by an assistant on each side. The bulk, in most cases, must first be reduced by continually massaging the organ, having first wrapped a cloth round it to prevent injury. Another method is to use a broad piece of cheese cloth similar to a bandage and, starting at the fundus, apply it as a bandage right up to the vulva.

The part nearest the vulva is returned first and if anæsthesia be complete there is no great difficulty, but when no anæsthetic is used and the cow is almost constantly straining one can only make progress between the straining periods. A few cotyledons may be torn off in the process, but that is not a serious matter. We have seen the hand of a too nervous assistant go through the uterine wall; such a lesion should be immediately sutured by a continuous suture.

When the eversion is completely returned the hand should follow it, in order to smoothe out both horns into their normal position. When, as frequently happens, the operator's arm is not long enough to press the horns into their remote position, this may be done by clasping the neck of a bottle in the hand and carefully pressing with the rounded bottom of the bottle the part to be returned. Alternatively, a large quantity of warm water introduced by tube serves to balloon the uterus and thus replace it effectively, when the water can be syphoned off.

It is advisable, although not always necessary, to put a clamp on the vulva or to suture it. This should always be done if the animal is to be left unattended. Remove the clamp 24 hours later and douche with warm antiseptic solution and introduce iodoform and oil. The clamp is generally no longer required.

Recently Mr. F. C. Scott, M.R.C.V.S., of Pontefract, has perfected an apparatus which he calls a uterine valise. I have not yet had an opportunity of trying it out, but it has apparently many advantages. The *modus operandi* consists of wrapping the uterus in the canvas valise and, by gradually pulling on a system of straps, the bulk is compressed and reduced to returnable dimensions. The canes which carry the straps are withdrawn bit by bit as the organ is returned. I have the valise here for your inspection.

AMPUTATION OF THE UTERUS

There is no doubt that the uterus, in many cases, is returned, when amputation or immediate slaughter should have been resorted to.

Such cases include:—

(1) When the uterus has been severely damaged, by a neighbouring cow trampling on it, or by the rough handling of attendants.

(2) When it is very large, dark coloured, and friable.

(3) When it has been exposed to frost for some hours.

In other cases, where it has been decided to salvage the animal but in which, as the eversion has taken place during the night, we wish to keep the cow alive till daylight, for removal, amputation is almost a necessity.

Operation.—An anæsthetic is administered and a strong piece of tape or cord is threaded on a sack needle. An incision is now made through the uterine wall and the hand is introduced to make sure that there are no intestines present. The cord is passed through the narrow part of the uterus near the vulva, from above to below, and each half is tied off separately. The tieing off is a gradual process, each end of the cord being pulled by an assistant. This is repeated with another cord, this time passing the needle from side to side through the narrow part.

The uterus is amputated 1½-2 inches from the cord, the stump dressed with iodoform and returned to the vagina and a clamp applied to the vulva.

Antiseptic treatment is carried out daily till the tied-off part sloughs.

THE CLEAN MILK CONTROVERSY

Dr. N. C. Wright, director of the Hannah Dairy Research Institute, repudiates, in a recent short article in *The Lancet*, the suggestion in earlier letters that doubt still exists as to the safety of Grade A (T.-T.) milk, particularly as regards its freedom from tuberculosis infection. During the past two years an investigation has been carried out at the Hannah Institute. Samples of milk were obtained from practically every T.-T. herd in Scotland, and in addition a large number of retailed bottles of Certified and Grade A (T.-T.) milk were "bought over the counter" in the four largest Scottish cities. Altogether 750 samples were examined, and only one proved positive. This infected sample was due to a defective fence allowing the "free" cattle to mix with the neighbouring infected stock. Dr. Wright emphatically declares it is a disaster that progressive producers should receive such scant encouragement in their efforts to provide the public with a first-rate product.

To the like effect, we have had the figures of Dr. A. S. M. MacGregor, medical officer of health for Glasgow, challenged in respect of the amount of non-pulmonary tuberculosis among children due to bovine infection. "Dr. MacGregor is a strong protagonist on compulsory powers being granted for the pasteurisation of milk, his main point being that pasteurisation is absolutely essential under town conditions for the safety of child life," says the *North British Agriculturist*. "Statistics obtained from an investigation carried out by Dr. W. S. Blacklock, pathologist to the Royal Hospital for Sick Children, disclose the relative proportions of infections by the tubercle bacilli in children up to five years to be 113 human and 61 bovine, the percentage being 35 instead of 63·8. And from the ages of 5 to 15 years the proportions are 35 human and 26 bovine, the percentage being 42·6. It was said that one half of the non-pulmonary infections in children under fifteen years of age was due to bovine infection, whereas the percentage is only a little over one-third."

XUM

ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations, December, 1932

LIST OF SUCCESSFUL CANDIDATES

DUBLIN.

Class A

†Baker, William.	O'Hara, M. J.
Doherty, A. D.	O'Sullivan, K.
Fadden, W. S.	Powell, R. J.
†Langley, S.	Scott, Trevor.
Lappin, A. P.	Waldron, A.
O'Donnell, E.	Walsh, J. J.

Class B

Adams, C. B.	Hans, A. J.
Daly, J. P.	Stewart, D. M.
Farrell, J. M.	White, J.

Class C

Crawford, J. J.	Seton, A. D.
Healy, M. M.	Sweeney, J.

Class D

Conlon, J. B.	Griffin, R. P.
Crean, B. F.	Jarrett, W. F.

† Denotes Second Class Honours.

GLASGOW.

Class A

Barr, J.	Meiklem, R. K.
†Blair, J. W.	Nisbet, A.
Duffy, T.	Penman, D. C.
Dunbar, G. M.	Peters, Miss J. M.
Forrest, S.	Rolbag, E.
Leslie, V. J. S.	Smellie, A.
McAllister, D. I.	Smellie, J. B.
Marshall, James.	Swan, J. F. C.
*Marshall, John.	Taylor, R. F.

Class B

Campbell, A.	McGregor, P.
Douglas, W. M.	Wardrop, William.
Hall, R. B.	Smith, A. M.

Class C

Brown, J. C.	Paterson, E. S.
Chapman, A. S.	Slavin, D.
Harkness, D.	Steven, J.
Harvey, P.	Weir, A. E.

Class D

Maclean, D.

* Denotes First Class Honours.
† Denotes Second Class Honours.

(To be continued)

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LIVERPOOL B.V.Sc. EXAMINATIONS

The following is the University of Liverpool School of Veterinary Science Examination List for December, 1932, in connection with the University Degree of B.V.Sc.:—

Second Examination.—*Part I:* Edwards, G. B., Hey, T. E., Morton, Dorothy R., Patchett, Edith H. *Part II:* Edwards, G. B., Hey, T. E., Morton, Dorothy R., Patchett, Edith H.

Third Examination. — *Part III:* Tillemont-Thomason, Victoire de C. C.

Final Examination.—*Part II:* Jenkins, E. D.

ISLE OF MAN SWINE FEVER FREEDOM

An Order recently issued by the Deputy-Governor of the Island under the Cattle Diseases Prevention Act of 1929, suspends an important portion of the proclamation made nearly twelve years ago in regard to the movement of swine in the Island. The effect of the new Order is that it will not now be necessary for anyone moving swine from one place to another to obtain a licence from the police or the clerks to the village or parish commissioners of the Island. "The removal of the necessity for obtaining a permit to move swine will no doubt be warmly welcomed by farmers and others," says the *Isle of Man Times*, "as this has been the cause of a good deal of dissatisfaction among those concerned, seeing that the Island has been free from swine fever for so long. It is seven years since a case of swine fever was reported in the Isle of Man, and this remarkable freedom from the disease has led up to the issuing of the new Order. The original proclamation of January 18th, 1921, was made, of course, with a view to exterminating swine fever in the Island which had been prevalent before that date; but, as a matter of fact, it was not until four years later that the worst outbreak was experienced. In that year no fewer than 113 cases were reported following 20 in 1922, 14 in 1923, and 20 in 1924.

"The serious position in 1925 led to the issue, in the following year, of another Order requiring all swill fed to swine to be boiled. Experience had proved that all cases of swine fever had been traced to pigs which had been fed on unboiled swill, and this contention has been amply proved by the fact that no case of swine fever has been reported since.

"It is still necessary, however, for dealers to be registered, and for those registered dealers and proprietors of marts to keep a register recording particulars of each transaction in swine."

* * * * *

ANTICIPATING BULL LICENSING

"Pending the compulsory licensing of bulls, which is fixed to come into operation in July, 1934, farmers have been urged to get a voluntary scheme working, and the Leicestershire Executive Committee of the N.F.U. is considering a plan," writes a correspondent to the *Farmer and Stock-breeder*. "They recognise that in Leicestershire a dual purpose animal is likely to be more suitable and that pure-bred bulls only should be allowed.

"To secure a better type, it was suggested that the County Council be asked to allow their veterinary inspectors when engaged on inspection of the licensed herds, to inspect the bull and advise when a better type was required; alternatively, that the Ministry of Agriculture's Live Stock officers be asked to give advice to farmers on the subject of the right kind of bull.

"In the discussion it was doubted if either of the proposals would be practicable, and Mr. D. Kennedy emphasised the value of a sound bull apart from its conformation so that tuberculosis could be more easily eradicated.

"It was decided to test the feeling of the County Council on the matter before taking further action, it being pointed out that the main object was to get farmers ready for the change to compulsion. Mr. H. A. Swan added that too many grazers did not care what type of bull was used."

Clinical Communications

AN OBSTETRICAL PROBLEM

R. MACHIN, M.R.C.V.S.
Henley-on-Thames

Subject.—An 11-months-old Cairn bitch, mated accidentally during her first heat. The owner was not certain of the exact date of whelping, and on going to her kennel one morning found three healthy puppies feeding from the bitch, who appeared normal in every way.

Within the next hour, however, she was observed to strain feebly once or twice, from which the owner concluded that there was a fœtal membrane yet to be passed.

However, as no more straining had taken place by 12 noon, I was asked to see her. Another puppy was found to be present in the extreme end of the left horn of the uterus, and the usual procedure was adopted with a view to stimulating the uterus to action.

As by 6 p.m. the puppy was in precisely the same position as before, Cæsarian section was decided upon at once.

At 7 p.m. the bitch was opened, when the abdominal contents presented an interesting sight, being adherent to each other by bands of fibrous tissue, one of which, about an inch broad, had passed from the small intestine around the uterus, completely imprisoning the fœtus. The uterus at this point was so constricted that a forefinger could not be passed through it.

The uterus having been opened, the pup, now dead, was removed, and the uterus sutured and oversewn. Next, the adhesions around it were dissected away, and the abdomen closed.

As soon as the bitch had recovered from the anæsthetic, a pup was put with her, and she was discharged on the third day, the sutures being removed on the seventh.

I conclude the condition was due to a previous peritonitis.

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NEPHRECTOMY IN THE DOG

R. MACHIN, M.R.C.V.S.
Henley-on-Thames

Subject.—A six-months-old Cocker Spaniel, male, run over by a motor car about 10 minutes before being brought to the surgery.

On admission, it was obvious that serious internal hæmorrhage was taking place, and it was decided to perform laparotomy at once.

The abdomen was found to be entirely filled with blood, which was drained off as quickly as possible, and the cavity swabbed out with boiled cotton-wool.

The hæmorrhage was coming from the vessels supplying the right kidney, which was ruptured. These were ligated, the kidney removed, and the abdomen closed.

Normal saline was injected subcutaneously during the next 12 hours until 1½ pints had been administered.

The dog was discharged on the fourth day, and has made a complete recovery.

Anæsthesia was induced in both these cases by chloroform alone, no morphine being employed.

Nephrectomy Subject: seven weeks after operation

TREATMENT OF LESIONS OF THE WITHERS AND BACK

The withers and back are frequently the seat of lesions from an ill-fitting saddle, or other causes, which set up painful œdematous and inflammatory processes.

The successful combat between the tissues and an invading force often depends upon the extent and activity of the hyperæmia present, and the timely induction of an active hyperæmia will, as a rule, effect a rapid amelioration of the inflammatory process, through a stimulation of the local and general metabolism.

There is probably no remedy which will better serve the veterinary surgeon in his treatment of collar galls, fistulous withers, sit-fasts, abscesses, or excoriations of the skin, than will Antiphlogistine (Veterinary) Brand Dressing. Applied as warm as the patient can bear, this Dressing produces an intensive hyperæmia and causes the blood to flow in larger quantities from the deeper tissues to the surface under treatment. Thus, through the dilatation of the blood vessels and the locally increased osmotic exchange, the pathological products are poured in larger quantities into the blood where they are dissolved. Besides being actively decongestive and analgesic the Dressing is an antiseptic of just sufficient strength to stimulate the regeneration of the tissues without causing their destruction. Veterinarians are invited to write to the Denver Chemical Mfg. Company, London, E.3, for sample and literature. [*Advt.*

Abstracts

[**Methods for the Isolation of *BRUCELLA ABORTUS*.** Henry, B. S., Traum, J., and Haring, C. M. *Hilgardia, 6,* 12. 356-377. 7 Figs. 21 refs.]

Owing to the greatly increased interest in *Brucella abortus* since it has been definitely established as a human pathogen and since its economic importance has been more widely recognised, the attempted isolation of the organism from suspected materials has become a routine practice in a large number of laboratories not previously interested in the *Brucella* group. In this contribution the authors detail procedures, and give experimental data, based on several years' work of the California Agricultural Experimental Station and other laboratories interested in bovine-abortion control. The methods employed have " uniformly given satisfactory results in research and also in routine diagnosis, such as certified-milk inspection and control work in other dairy herds."

A comparison of direct-culture methods with guinea-pig inoculations for the isolation of *Brucella abortus* from milk is made, the latter being found much the more efficient. The technique for the isolation of *Brucella abortus* by guinea-pig inoculation and by culture methods is given in detail.

In an attempt to determine the reliability of the three common criteria of infection in artificially inoculated guinea-pigs; namely, agglutinin production, lesions, and spleen cultures, it was found that the relation of positive spleen cultures, agglutination titres over 1 to 25, and macroscopic lesions, in a total of 516 guinea-pigs showing some evidence of infection, was 98·8 per cent., 93·8 per cent., and 84·7 per cent. respectively. For this reason, the spleen-culture indication is considered the most reliable of the three.

Observation was made of the incidence of *Brucella abortus* in the urine and blood of guinea-pigs six weeks after inoculation with infected material. This organism was recovered in cultures of the urine in 22·6 per cent. of 106 guinea-pigs known to be infected, and the frequency of the organism in the urine of males was over three times that in the urine of females. *Br. abortus* was also to be obtained in cultures from the blood in 47·6 per cent. of 126 guinea-pigs known to be infected. There was no significant difference between the number of positive blood cultures obtained from the male and the female guinea-pigs.

W. B.

[**The Changes in the Composition of the Blood and in the Tone of the Sympathetic Nervous System during Pregnancy and the Puerperium.** Seekles, L., Sjollema, B., and van der Kaay, F. C. *Biochem. Zschr.* 1932. Vol. 249. Nos. 4, 5 & 6.]

Author's Summary

(1) According to our researches on three cows, there occurs up to the fourth day before parturition no significant alteration in the constitution of the blood serum.

(2) At about the fourth day *ante-partum* a slight fall in blood Ca and inorganic P occurs: thereafter and for a few days *post-partum* slight fluctuations occur. The lowest values were found shortly before or after parturition.

(3) The Mg content was examined in one cow and found to be high and in conflict with the Ca and P content.

(4) The K content showed a fall with a minimum a few days *post-partum*.

(5) The diffusible part of Ca, inorganic P and Mg and the Ca ion content may change along with the total values for these minerals. Irregular fluctuations were observed.

(6) The blood sugar content of seven cattle showed a rise during the puerperium.

(7) The content of acetone bodies was greatly raised in these animals and fluctuated greatly. Usually high sugar values along with low acetone values are found.

(8) The residual nitrogen of the blood showed no change.

(9) Typical milk fever was observed in one cow and with delayed symptoms, which did not coincide with the lowest Ca value, but occurred after the Ca value had begun to rise again.

(10) The milk fever was cured in one-and-a-half hours by the injection of parathyroid extract, but after recovery the total Ca value was lower than during the attack, whilst the Ca ions had been doubled. It appeared that there was a connection between the muscular tone and the calcium ion content.

(11) With the progress of a pregnancy it appears that there is a relative rise in the vagotonicity of the heart with a fall again after parturition. It was found in one case that there was a connection between the hypervagotonicity and a rise in the K/Ca proportion of the blood serum. It was found, however, in another animal that other factors may be concerned also.

J. E.

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[**On the Question of the Etiological Significance of Trichomonads found in cases of Pyometra and sporadic Bovine Abortion.** Riedmüller, L. *Schweiz. Archiv. f. Tierhlk.* 1932. Vol. 74. No. 7.]

This is a discussion on the literature of bovine abortion, etc., and its connection with tricho-

monads (protozoa akin to trypanosomes). Riedmüller and others have previously found these parasites in the vagina, uterus and fœtus of cases of abortion and although considerable work, including serological and animal inoculation tests, has been performed (two new cases are described in detail in this article), it is not yet clear as to what degree trichomonads are responsible for causing abortion. It is concluded that the parasite found in cattle is distinct morphologically from *T. vaginalis*, which is pathogenic in women.

J. E.

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[Post-partum Paralysis of the Obturator Nerve in the Cow. Cotton, O. *Rev. Gén. de Méd. Vét.* 1932. Vol. 41. No. 481. p. 11.]

The subject was a multiparous cow which delivered prematurely a normal living calf. According to the owner, calving occurred without the usual preliminary signs. Immediately after calving, the left hind-leg become totally paralysed. When the cow was standing, the affected leg was extended forwards or inwards. Although it was used as a prop, the animal put no weight upon it. If forced to use the leg the cow fell to the left with the leg extended. The general condition of the cow was good, appetite was maintained, lactation occurred. Milk fever was excluded as the trouble was confined to one leg. There were no signs of fracture, sprain or luxation. It was noted when the animal was standing that the affected leg swung so loosely that it knocked against the external surface of the right hind-leg.

Diagnosis.—Paralysis of the obturator nerve caused by compression.

Treatment.—Hot fomentation. Cure was complete in three days.

C. McG.

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[The Mineral Content of Pasture Grass. Sjollema, B. *Tierernährung.* 1932. Vol. 3. No. 6.]

A number of samples of pasture grass were obtained from land on which cases of grass tetany in cows had occurred. Their protein and nitrate content has previously been referred to in volume 2, page 505 of the same journal. The grasses were arranged in four groups according to their protein content and their mineral constituents determined (shown in tables). No connection between protein and mineral content was found; the calcium content was, generally speaking, low and the other minerals showed great variation. Mg and P were considered normal for cultivated grass and K was high. A further paper on the subject is promised.

J. E.

Report

TANGANYIKA TERRITORY

ANNUAL REPORT OF THE DEPARTMENT OF VETERINARY SCIENCE AND ANIMAL HUSBANDRY, 1931

On the retirement of Lieut.-Colonel F. J. McCall, C.B.E., after twenty years' service, Mr. H. E. Hornby, O.B.E., was appointed Acting Director of Veterinary Services. The annual report compiled by him is, as explained, " on the same lines as its predecessors," and is so full of interest that a short review cannot do it justice. It is printed by the Government Printer, Dar es Salaam, and those interested in Tropical Veterinary Medicine should obtain copies.

The second part of the report is concerned with Disease Control. With regard to rinderpest it states that " the favourable position of December, 1930, was not maintained." The chief method of spread was by the movement of infected cattle, but another method was through raw meat. Game may have contributed to its spread; certainly buffalo were infected in Bukoba Province, and giraffe were found dead in Tabora Province, as were wildebeeste in the Central Province. During 1931 the method of combat was by quarantine and serum-alone inoculations. A new and effective method by means of vaccination with formolised vaccine was tried out in Tanganyika as in other countries. Contagious bovine pleuro-pneumonia remained confined to Masailand, where there were four large quarantines containing about 110,000 cattle. No real progress can be made in the suppression of East Coast fever until fuller information concerning its distribution is obtained. In certain areas it is enzootic; in others, sporadic; in others, apparently non-existent. The methods of dealing with it vary from place to place. Trypanosomiasis is very prevalent and is " practically determined by the absence or presence of tsetse." The persistent fly-encroachments which year by year whittle away the cattle areas, cause considerable anxiety. Very little practical reclamation from tsetse was accomplished to offset these losses. Anthrax occurs throughout the Territory and a large number of animals die from it. It would be of interest to ascertain why the number of cases of human anthrax as compared with those in animals is so small. Only one outbreak of foot-and-mouth disease was recorded, and " as is usually the case with outbreaks in this Territory, its origin was untraced, it ran the usual wild course (*sic*), and died out within three months." The Acting Director awaits with much interest the results of the intensive study of the African form of foot-and-mouth disease

which is being prosecuted by the Veterinary Department of Southern Rhodesia. Blackquarter, tuberculosis, cutaneous streptothricosis, snotsiekte, plant poisoning, piroplasmosis, swine fever, contagious pneumonia of goats, and other diseases of sheep and goats are recorded.

The work of the Veterinary Laboratory, Mpwapwa, is dealt with at considerable length. More than three million c.c. of anti-rinderpest serum were issued during the year. Piroplasmosis continued to complicate the serum-simultaneous inoculations and nasal swabbing, as a simple but effective measure for the elimination of piroplasms from the virus, was adopted.

Valuable research on trypanosomiasis was carried out and many original observations are recorded, which should be studied in the original. This section of the report concludes with the opinion that "Artificial immunisation of domestic animals is therefore within the bounds of practical possibility, though many difficulties and even objections have yet to be overcome."

Mr. S. A. Evans contributes a section on Rinderpest Research, which is largely connected with the preparation and standardisation of the formalised vaccine. Mr. M. H. French deals with Animal Nutrition Research, and Mr. R. R. Staples with Animal Husbandry. It is regretted that the limited space at command does not enable one to review these valuable reports more fully. Ll. E. W. B.

NATIONAL PONY SOCIETY

Ponies will occupy the Royal Agricultural Hall, Islington, on March 3rd and 4th, and 52 classes have been provided by the National Pony Society. Eleven classes for polo young stock, mares and stallions will remain practically the same as the last show, but in addition to the six polo riding classes there will be a class for hacks (polo-bred) that have not won a prize as a hack under saddle previous to the closing date of entries.

There are to be thirteen classes for Shetland, Welsh, and Mountain and Moorland breeds, seven classes for Arab horses, and five classes for children's ponies. The competitions have been revised to meet popular demand.

Arrangements have been made for the polo ride by the Queen's Bays to be given daily.

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THOROUGHBRED PREMIUMS

In view of the Government decision entirely to withdraw the Light Horse Breeding Grant, and the fact that not even the reduced grant of £8,000 will be forthcoming during 1933, the Council of the Hunters' Improvement Society has decided that,as it is a National necessity that horse breeding should be maintained, the Society's very limited reserve funds should be drawn upon. Accordingly, the Society will offer (approximately) 50 premiums of £50 each for thoroughbred stallions to travel England and Wales, including two for Scotland.

These premiums will be competed for at the Thoroughbred and Hunter Show at the Royal Agricultural Hall, London, on February 28th to March 2nd.

N.V.M.A. Divisional Reports

LANCASHIRE VETERINARY MEDICAL ASSOCIATION*

MEETING AT MANCHESTER

A General Meeting of the Lancashire Veterinary Medical Association was held at the Grand Hotel, Aytoun Street, Manchester, on Wednesday, October 26th, 1932, at 2.30 p.m.

The Chair was occupied by the President, J. Spruell, Esq., other members present being:—Messrs. E. H. Curbishley, W. Woods, H. Sumner, junr., H. T. Matthews, H. S. Caldwell, G. Mayall, Warwick Fowle, A. B. Mattinson, J. Holroyd, R. C. Locke, H. Davies, E. W. Prescott, and A. L. Mullen, Hon. Secretary. Messrs. W. F. Aston and J. R. Barker were present as visitors.

Apologies for unavoidable absence were received from Messrs. J. H. Wright, H. Burrow, A. B. Kerr, E. J. Burndred, G. O. Davies, Professor Gaiger, C. T. Trevors, G. C. Webster, W. Tweed, H. H. Aldred, R. Hughes, A. W. Noel Pillers, H. Holroyd, and G. H. Locke.

The minutes of the previous meeting were taken as read.

Correspondence.—A letter was read from the General Secretary of the National Veterinary Medical Association with reference to the nomination of four members of the Division to the Provisional Committee concerning the Congress to be held at Llandudno in 1933.

It was proposed by Mr. Holroyd, seconded by Mr. Mattinson, and unanimously resolved, that Messrs. A. W. Noel Pillers, G. H. Locke, W. Woods and Colonel Brittlebank be asked to serve on the Committee, and that in the event of any one of the aforementioned not being available, Mr. F. G. Edwards be asked to serve.

Election of an Hon. Associate.—Mr. Curbishley proposed that Colonel J. W. Brittlebank be elected an Hon. Associate of the Division, saying that the Division would not only be honouring Colonel Brittlebank, but itself by so doing. Colonel Brittlebank had done a great deal of work for the Profession and deserved every recognition that could be bestowed upon him.

Mr. Woods seconded and said that Colonel Brittlebank's work was too well known to require any further description by him. The proposition was carried unanimously.

Election of New Members.—Mr. W. H. W. Baird, Hooton, proposed by Mr. Spruell on behalf of Mr. Cochrane-Dyet, seconded by Mr. Curbishley, and Mr. R. Hopps, Liverpool, proposed by Mr. Mullen and seconded by Mr. Mattinson, were elected members of the Division.

Paper.—The next item on the agenda being a paper on "Convulsions in Cattle," by Mr. J. R. Barker, M.R.C.V.S., D.V.H., Hereford, the President

* Received for publication, November 29th.

called upon Mr. Barker to present it. [Mr. Barker's paper, and a report of the discussion which followed its presentation, are reproduced earlier in this issue.—Ed. *V.R.*]

A vote of thanks to Mr. Barker was proposed by Mr. Sumner and seconded by Mr. R. C. Locke, who coupled with it the name of Mr. Caldwell for opening the discussion. The proposition was carried with acclamation.

Interesting Specimens.—Mr. E. W. Prescott exhibited the brain of a van horse which had suddenly become violent in the stable-yard. It was slaughtered and on *post-mortem* examination the brain was found to have two large tumours, one on each side. The animal was aged, and had shown no symptoms of any kind previously. Mr. Prescott also exhibited a large fibrous tumour which was attached to the omentum by a short pedicle, and which had caused death eventually through strangulation of the bowel.

Mr. H. S. Caldwell exhibited a piece of the Ligamentum Nuchæ taken from a fistulous withers case, showing onchocerca, which had apparently caused the trouble.

There being no other business, the meeting closed with a vote of thanks to the President for his conduct in the chair.

A. L. Mullen, *Hon. Secretary.*

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WEST OF SCOTLAND DIVISION*

MEETING AT GLASGOW

A meeting of the Division was held in the Glasgow Veterinary College on Wednesday, November 23rd, 1932.

Professor Wm. Robb occupied the chair, and the following members were present: Professor Weir, Messrs. Stark, Harley, Jackson, Ferguson, R. Mitchell, Renfrew, Campbell, Taylor (Cathkin), Watt, McIntyre, Sillars, Brodie, Gibb, H. Begg, junr., Dykes, Cruikshank, Anderson, E. Brown, D. Brown (Kilwinning), J. McFarlane (Doune), J. McFarlane (Glasgow), A. Pottie (Paisley) and A. Thomson, Hon. Secretary. Messrs. J. M. Mitchell (Glasgow) and H. M. Wilson (Cupar, Fife) were present as visitors, and also a number of the senior students of the college.

The minutes of the last meeting, as printed in the *Record*, were taken as read and adopted.

Apologies for absence were received from Major McGregor and Mr. Peter Meikle.

A report was received from Professors Robb and Weir, who intimated that the R.S.P.C.A. in the West of Scotland would not move in the matter of establishing a free Dispensary in Glasgow, as they considered that the present Dispensary run under the auspices of the Dog and Cat Home, in charge of a veterinary surgeon, was serving the purpose adequately. It was decided that no further action be taken.

Correspondence.—(1) Letters were read which had passed between the Secretary and the Secretary of the Livestock Salesmen's Association regarding the resolution on the warranty of cows udders at auction marts. Nothing of a definite nature has transpired.

The Secretary was instructed to write further in the matter.

(2) A letter from the N.V.M.A. intimating that Article 24 was in force. It was reported that, accordingly, payment of the nominal annual fee had been made.

Johne's Disease.—In connection with the resolution of the "Midland" on the advisability of scheduling Johne's disease, it was resolved that, in view of the difficulties of diagnosing the condition at present, no good purpose would be served by making it a notifiable disease.

Membership.—Mr. John Mitchell (Glasgow) was nominated for election as a member of the Division.

Messrs. Esmond Brown and Adam Gibb were elected as members.

Demonstration.—A very interesting demonstration of an enterotomy was given by Mr. A. H. F. Robb on a dog (dead subject). Each stage of the operation was explained and the technique was easily followed by all present.

Professor Weir thanked Mr. Robb and expressed the hope that the Division might expect another demonstration from him at a future date, as he was of opinion that the good turn-out of members was largely due to his share in the proceedings of the meeting. (Applause.)

Paper.—An excellent paper by Mr. H. Begg, junr., "Conditions Associated with Parturition in the Cow," followed; and should provide material for an exhaustive discussion at the next meeting, as it was decided to postpone it till then, owing to the lateness of the hour. [Mr. Begg's paper is reproduced elsewhere in this issue.—Ed., *V.R.*]

Votes of thanks terminated what, as it was generally agreed, had been a very instructive and sociable meeting.

Alex. Thomson, *Hon. Secretary.*

HORSES IN MINES

The text has been issued of the Coal Mines (Protection of Animals) Bill, a measure presented by Sir Robert Gower to amend certain provisions of the Coal Mines Act, 1911, relating to the care of horses and other animals used in mines. The amendments include provisions for the appointment of special inspectors in the ratio of one for every 3,000 horses or other animals, and the inspection of every horse and other animal used in mines at least every three months. It is proposed that no animal shall be worked for more than eight hours in any 24 hours except in cases of emergency, and owners, agents, or managers will be required to provide for the proper care and well-being of animals which are no longer employed in the mine. In cases where animals are sold or otherwise disposed of, reasonable precaution must be taken to secure that they shall receive proper treatment and care.

* Received for publication, November 28th.

XUM

IN PARLIAMENT

Protection of Animals

In the house of Commons on December 8th, Sir R. Gower presented a Bill to amend Section 3 of the Protection of Animals Act, 1911; and a Bill to amend certain provisions of the Coal Mines Act, 1911, relating to the care and protection of horses and other animals used in mines.

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The following questions and answers have been recorded in Parliament recently:—

The Musk Rat

In the House of Lords on December 6th, the Earl of Ilchester asked the Government what further progress had been made in dealing with the musk rat and nutria danger; whether the nutria had been scheduled under the Destructive Imported Animals Act, 1932; and what staff was employed by the Ministry upon the extermination of musk rats. The noble lord, who moved for papers, said that possibly the nutria was not so prolific or active as the musk rat, but its greater size made it an even greater danger. To deal with these pests might mean big expenditure, but it would be an economy to go ahead with it. Unless the matter was tackled seriously all over the country they would be spending millions in a year or two where they would probably be able to save the situation at the moment with thousands. Was it not worth spending thousands to save the reservoirs of this country, which would be undermined in time by this pest, to save the banks of the rivers, and to save the agricultural land on each side of the rivers? A thorough survey should be made of the whole country. A recent survey had been made of the River Severn over many miles at low water, and it was found that one could not go ten yards without new traces of the rat. The rat was also reported to be within two or three miles of the lake which was the chief water supply of Liverpool.

Earl de la Warr, Parliamentary Secretary to the Ministry of Agriculture, replied that the Ministry was alive to the very great danger with which this country was faced if we were to have an infestation of musk rats, and they were determined to do everything in their power to see that the country was not inflicted with such an infestation.

Their action with regard to the nutria must depend upon inquiries which were being made, and they hoped to have a report of these inquiries in the next week or so. If they were satisfied, as he gathered the trustees of the British Museum were already satisfied, that action was necessary, they certainly would not delay in taking it.

Returning to the musk rat, any appearance of this plague, in however small a form, was being and would be looked into. The Ministry were informed by their advisers that, apart from certain minor increases in their efforts, everything was being done which could be done on the existing basis; but if other methods could be suggested by experts and scientists they would be delighted to consider them.

Thirty trappers in the Shropshire area were catching 60 to 80 musk rats a week, and, working inwards, they were budgeting to reach the centre of the area before next summer. If his Department were advised by their experts that more trappers could usefully be employed they were quite prepared to consider that step. They were circularising local authorities in the areas concerned, as well as drainage authorities and catchment boards. They were also appealing to landowners to co-operate with the Ministry in every possible way. Posters and leaflets were being sent to all interested parties. They had received great assistance from the publicity in the Press. A great German expert had agreed to come over and help them in their campaign. The Ministry were not complacent in the matter. They were in fact not happy about the situation, and while pursuing with vigour their present policy they would welcome any suggestions for further action.

The Archbishop of Canterbury, speaking as one of the trustees of the British Museum and the Natural History Museum, said that his colleagues specially desired that there should be a complete survey of the whole country in regard to this matter. He did not see how the admirable desires of the Government could be carried out unless they knew the circumstances, not merely of one area, but of the whole country.

He doubted whether the gravity of the matter was realised by the local authorities. He did not see how the local authorities could tackle what was a most important and intricate subject unless the Ministry of Agriculture would greatly increase the number of investigators and specialists who were prepared to give advice in the different areas which a survey would show to be really in danger.

The Earl of Crawford said he was very much disturbed about the nutria. Six weeks ago, with full knowledge of the case, the trustees of the Natural History Museum asked the Ministry of Agriculture to schedule this animal, and nothing had been done. He urged Lord De La Warr to be much more active in this matter than he had been hitherto.

Lord Hanworth said that it was because the trustees of the British Museum desired to emphasise the great importance of the subject that they asked the noble earl to present a case. There was too much of a note of futurity in Lord De La Warr's speech; he would like to have heard that something had been done since the debate of six weeks go. To distribute leaflets saying: "Please catch musk rats" and issue posters was a waste of money. People would not know how to catch them or how to find them. Where were the Ministry's expert advisers and how many trappers were being trained?

The Earl of Ilchester thanked Lord De La Warr for his reply and said that he urged him to increase his staff of trappers because they could not be in two places at once, and if they were in Shropshire, what was going to happen to the rest of England? He asked leave to withdraw his motion.

The motion was by leave withdrawn.

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House of Commons questions and answers:—

Musk Rats

Mr. Touche asked the Minister of Agriculture the names of the counties in which musk rats have been found?

Major Elliot: Since the passing of the Destructive Imported Animals Act, 1932, on March 17th last, musk rats have been found at large in Shropshire, Montgomeryshire, Cambridgeshire, Kent, Surrey and Sussex. With the exception of the infestation in Shropshire, which has spread into the adjacent parts of Montgomeryshire, no colonies of the animals, as opposed to isolated individuals, have been discovered. The presence of musk rats at large has been suspected, but not definitely confirmed in Cheshire, Gloucestershire, Hampshire, Herefordshire, Lincolnshire, Staffordshire, Suffolk and Yorkshire.

Mr. Touche asked the Minister of Agriculture the progress made in the extermination of musk rats in Surrey?

Major Elliot: There is at present nothing to add to the reply given to the question put to my predecessor by my hon. Friend on June 30th last. A musk rat was recently reported to have been killed at Compton, near Guildford, but the animal in question has since been identified as a water rat.

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Vivisection

Mr. Groves asked the Home Secretary whether every place registered for vivisection under the Act, 39 and 40 Vic., c. 77, was visited by an inspector during last year; and, if not, which places were not visited?

Sir J. Gilmour: All the registered places were inspected last year except one, for which no licence was available during 1931.

Mr. Groves asked the Home Secretary when certificates were last granted authorising experiments upon animals to the research laboratory of the Royal Dental Hospital and the dates of such certificates; and whether he will state the nature of the experiments performed under the certificates and the kind of animals upon which the experiments were performed?

Sir J. Gilmour: The last certificates for experiments on animals at the Royal Dental Hospital, London, were allowed to come into operation in October, 1931, and they are still in force. It would be contrary to practice to give information as to the nature of the experiments performed by the person holding them.

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Irish Free State (Special Duties) Act (Foals)

Mr. de Rothschild asked the Chancellor of the Exchequer whether, when a foaling mare has been sent from England to the service of a stallion standing in Ireland, on her return to England with her foal (born in Ireland) at foot, both animals are allowed to be landed duty free?

Mr. Hore-Belisha: In the circumstances stated, assuming that the question refers to the Irish Free State and not to Northern Ireland, the mare would be admitted duty free, but the foal would be liable to duty under the Irish Free State (Special Duties) Act, 1932.

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Remounts

Colonel Clifton Brown asked the Financial Secretary to the War Office whether, since the imposition of the special duties upon horses exported to this country from the Irish Free State, the War Office has obtained the bulk of its supplies of remounts within Great Britain; and, if so, whether the standard of the remounts now being purchased is equally good and the cost no greater?

Mr. Cooper: Since the imposition of the special duties, 330 remounts have been purchased, of which 198 have been obtained in Great Britain and the remainder in Northern Ireland. The answer to the last part of the question is in the affirmative.

DOUBLE DIPPING OF SHEEP

At a meeting of the Merionethshire Farmers' Union at Dolgelly the Secretary reported that during the progress of double dipping of sheep at Dinas Mawddwy 13 sheep belonging to a farmer had died, while at other farms in the same neighbourhood a large number of sheep had been seriously affected after being double dipped. It was reported that an application had been sent to the Ministry of Agriculture appealing that the present double dipping period, July 17th to September 21st, should be changed to September 16th to November 16th.

Council of Agriculture and Pure Milk

At the thirty-ninth meeting of the Council of Agriculture for England, held at Middlesex Guildhall, on December 8th, Mr. George Dallas presented a report, subsequently adopted, on the purity of the milk supply. The report contained important proposals for the establishment of a State veterinary service to undertake, among other duties, a thrice-yearly inspection of all dairy herds of cows with the object of ensuring purity of supplies of milk. Such a scheme, it was estimated, might cost £360,000 a year, calculated on the cost of the county veterinary scheme in the West Riding.

Emphasising that the value of the country's milk supply was more than £50,000,000, Mr. Dallas said that if they could inspire the confidence of the public in the commodity they were selling they might be able to extend the milk trade.

It was regrettable to read some alarming statements by medical officers of health. He thought equal prominence should be given nowadays to the tremendous advance made by the farmers in bringing the milk supply to a high standard of purity and quality.

Major F. H. Fawkes, of the West Riding, seconding the report, suggested that improvement in the cleanliness of milk could be stimulated if the methods of many large retail and wholesale firms were adopted—a method of paying a differential rate for milk according to cleanliness. He felt sure that, linked up with local authorities, there would be eventually a State veterinary service. Until they tackled the question of tuberculosis among cattle they would not have the progress in livestock policy for which they hoped.

In the report it was pointed out that the cost of a scheme involving an expenditure of £500,000 for Great Britain, or less than one per cent. of the total value of the country's milk supply, is not high considering the benefits to be derived, not only in respect of the reduction of tubercle in milk, and in dealing with all animal disease, but in further enlightenment of the farmers on matters of veterinary hygiene and sanitation.

The Standing Committee entered upon a detailed analysis of the West Riding scheme and stated: "We consider that this matter is one of the greatest importance and should be taken in hand without delay." It is pointed out that the number of tuberculous milk and udder cases discovered in the West Riding in 1931 was 411, or about 0·4 per cent. of the animals inspected, and in the counties where there was no routine inspection the percentage in the same year was 0·11, while in a group of counties where there was a routine inspection by part-time officers the percentage was only 0·06.

"Unless farmers and local authorities take speedy steps to clear all milk from the likelihood of tuberculous contamination," says the report, "more and more milk will be pasteurised. But efficient pasteurisation is usually only able to be performed by the large distributing concerns, and the business of milk distribution may be expected, in such circumstances, to pass more and more into their hands. For the farmer, producer-retailer, and smaller retailers to defend their claim to a share of the market it is essential that the herds giving the milk should be free, or guaranteed free, from any tuberculous infection."

[The above should be read in conjunction with Major Rabagliati's article, "The Veterinary Profession and the Milk Supply," published in our issue of November 26th.—Ed., *V.R.*]

XUM

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

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DIARY OF EVENTS

Dec. 30th.—N.V.M.A. Committee Meetings, at 2, Verulam Buildings, Gray's Inn, W.C.1 — Finance 3.15 p.m., Editorial 4.30 p.m.

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DEPARTMENT OF VETERINARY PATHOLOGY, LIVERPOOL UNIVERSITY.

Anonymous Donor's £4,000

The Council of the University of Liverpool has gratefully accepted a gift of £4,000 from an anonymous donor for the provision of additional laboratory and animal accommodation in the department of Veterinary Pathology.

We understand that the animal accommodation about to be built is to house experimental animals, large and small, for the research activities of the Department of Animal Pathology in the University of Liverpool. Buildings for this purpose and a research laboratory will cost approximately £4,000. A further capital sum has been raised to provide the cost of the rates upon the new premises. The University has provided the necessary land, immediately adjoining the Department, for the purpose of this scheme, which is to be put in hand at once.

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FOOT-AND-MOUTH DISEASE

The existence of foot-and-mouth disease was confirmed on Sunday last at Lyndhurst, in the New Forest, and the usual prohibition of movement of animals order is in force.

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ARMY VETERINARY SERVICE

London Gazette—War Office—Territorial Army Reserve of Officers

Dec. 16th.—Maj. C. E. W. Bryan, from Active List, to be Maj. (Dec. 17th).

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INTERNATIONAL VETERINARY CONGRESS HEADQUARTERS

"Veterinarians everywhere will be gratified to learn that Dr. O. E. McKim, chairman of the local committee on arrangements for the 12th International Veterinary Congress, which will be held in New York City during August, 1934, has contracted with the management of the Waldorf-Astoria Hotel for supplying the facilities necessary for a headquarters for that important gathering," says *Veterinary Medicine*.

"The old Waldorf-Astoria was known to every travelled American and nearly all world travellers. Unquestionably it was the most widely known hostelry in all the world. The new Waldorf-Astoria, opened in 1931, continues the high standards of personal service of its distinguished predecessor. In architectural design, equipment and appointments, it excels anything heretofore attempted elsewhere. The hotel building rises to a height of 47 storeys. It is a fine example of modern American architecture."

Errata.—In report on "Experiments with Mr. H. Spahlinger's Anti-tuberculosis Vaccine," on page 1474 column 2, under heading Summary of Results, Group 3, the sentence following should read:—"Eleven animals vaccinated with New Vaccine on December 2nd, 1931."

On page 1477, final graph of Control Group, at the end of "Days after inoculation" are two dates, August 8th, 1932, and August 12th, 1932. These were included as indicating the dates on which the last two temperatures of calf No. 24 were taken before its death on August 18th, 1932, and not as indicating dates of death.

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MOSQUITOES, CARRIERS OF ANÆROBES

In a herd of cattle several became sick showing marked swelling of the mucous membranes, and two of the animals succumbed. The condition was caused by anærobes. The animals were removed to different pastures and mosquitoes caught in this particular region were found to be carriers of the Gærtner gas bacillus as well as another anærobes designated as *Para-rauschbrand bacillus.—Berthold, Ber. Tier. Woch.*

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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BR. ABORTUS INFECTION IN MAN

To the Editor of the Veterinary Record.

Sir,—It would appear to be certain that *Br. abortus* infection in man is a condition to be reckoned with. Nevertheless, it is at least possible that there is a tendency grossly to exaggerate the risk connected with handling infected animals and/or consuming the milk yielded by them.

Living vaccine has been suspected of adding to the number of dangerous cows. If vaccines containing living bovine strain of *Br. abortus* will materially diminish the losses suffered by the owners of infected herds, there would be no object in using a porcine strain of the organism. The porcine strain is held to be more virulent for man. There is no evidence, apparently, that the latter strain is common in this country, and it would be a pity if it were spread by a living vaccine.

It may be that no vaccine contains a porcine strain, but it might be wise to ask for a guarantee from makers and distributors of living vaccine to the effect that the products they handle do not contain porcine type of *Br. abortus*.

Yours faithfully,
S. J. Motton.

Penzance.
December 12th, 1932.

The Editor acknowledges, with thanks, the receipt of the following:—

Communications from Messrs. J. Adamson (Bolton), F. C. Heathcote (Bridgnorth) and W. Philipson Moss (Woking).

Report of the 23rd General Meeting of the South African V.M.A., from Dr. H. H. Curson, Hon. Secretary.